THE OIL WEEKLY

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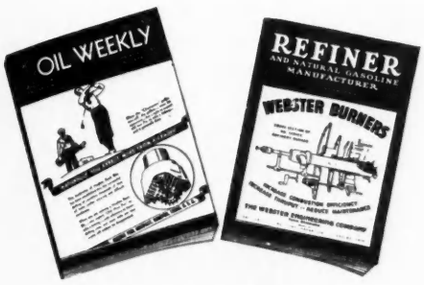

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The Oil Man's Calendar

FEB.	
15	**A.P.I., East Texas Chapter, Kilgore, Texas.**
14-18	**American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.**
17-18	**Mid-Continent District, A.P.I., Division of Production, Amarillo, Tex.**
MAR.	
15-17	**Society of Exploration Geophysicists, New Orleans.**
16-18	**American Association of Petroleum Geologists, New Orleans.**
21-25	**Western Metal Congress, Biltmore Hotel, Los Angeles.**
23-25	**American Society of Mechanical Engineers, Los Angeles, Calif.**
24-25	**Southwestern District, A.P.I., Spring Meeting, Fort Worth, Texas.**
APR.	
13-15	**Petroleum Industry Electrical Association, Rice Hotel, Houston.**
13-15	**National Petroleum Association, Cleveland, Ohio.**
14-15	**A.P.I., Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pennsylvania.**
19	**A.P.I., Division of Production, Pacific Coast District, Spring Meeting, Biltmore Hotel, Los Angeles.**
MAY	
6-12	**American Gas Association, Natural Gas Department, New Orleans, La.**
11-13	**Natural Gasoline Association of America, Hotel Tulsa, Tulsa.**
12-14	**National Oil Scouts Association of America, Tulsa, Oklahoma.**
14-21	**International Petroleum Exposition, Tulsa, Oklahoma.**
23-25	**A.P.I., Mid-Year Meeting Wichita, Kansas.**

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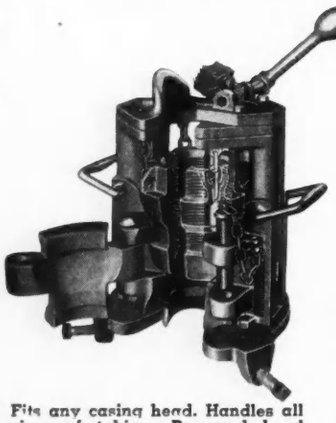

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LOOKING AHEAD

WITH THE EDITOR

Position of Countries Outside United States Enhanced . . .

CRUDE oil production in countries other than the United States has increased steadily for a number of years. Their output in 1937 amounted to 37 percent of the quantity produced in the world. Production in these countries during 1937 increased 8 percent over 1936.

Further increases in both production and drilling are projected for 1938. It is to be expected that countries outside the United States continually will become more important. Several factors point toward this belief, foremost among which is the steadily declining allowable per well in the United States.

THE OIL WEEKLY has long appreciated the importance of these operations, and has broadened its editorial effort continually. So that men of the industry may have an authoritative reference book highlighting conditions abroad we are going to publish

The OIL WEEKLY'S International Number February 21, 1938

For two months one of our editorial representatives has spent his full time on this issue. The past six weeks he has been in New York City. Another editorial man has been in Mexico, and still another in Canada. The cooperation of men located throughout the world has been obtained in preparing data. In addition, the issue will appear immediately following the foreign production symposium of the American Institute of Mining and Metallurgical Engineers in New York, the most important gathering of this kind. Data procured at this meeting will be included along with the material gathered exclusively by our men. There also will be a large insert map, showing much pertinent data on operations outside the United States.

The changing panorama

THE events of the oil industry lately have been largely of a favorable nature.

The markets for crude and refined oils have been showing increasing steadiness, in response to special efforts that have been made toward restricting output of wells and refineries in conformity with market requirements.

Gasoline Prices Steady

Particularly encouraging has been the steadiness of the gasoline market, from refinery to service station, in recent weeks, in the face of the all-time record levels of gasoline storage.

The better performance of the gasoline market has reflected, apparently, the indications that gasoline production henceforth may be better in line with market requirements than in recent months.

In the past week the output of gasoline at refineries was being absorbed fairly well by contract business and spot market sales.

The situation has been to some extent ameliorated by the temporary closing down of some refineries, by the dismantling of some of the less efficient plants lately, and by reduced gasoline production in other plants.

These developments have arisen in consequence of the comparatively low gasoline prices now prevailing; but they probably will help to improve the gasoline market.

Crude Control Strict

Another factor which undoubtedly has tended to improve the gasoline market has been the unusually strict control of crude oil production since the beginning of this year.

During January the crude oil stocks in the United States reflected the strict crude control, having increased less than 1,000,000 barrels. And in February the crude oil stocks probably will remain stationary again or possibly show a decrease. For the leading producing states have prescribed February allowables mostly conforming with or below the Bureau of Mines estimates of market demand.

Consequently, the crude oil markets, as well as the refined oil markets, have become steadier lately.

Texan Urges Strict Control

Promise has been given that the strict control of crude production will be extended on into spring, when the seasonal expansion in petroleum demand may be expected to relieve the present situation.

This hope was given last week through public assertions of Colonel Ernest O. Thompson, chairman of the Interstate Oil Compact Commission and a member of the Texas Railroad Commission.

Colonel Thompson has been a leader in bringing about the present unusually strict control of crude oil output; and apparently, he intends to continue his efforts along that line.

Fuel Oil Tax Proposed

President Roosevelt last week cast into the limelight a proposal to levy a federal tax of one cent a gallon on all fuel oil used for heat or power in the United States.

The President did not urge enactment of the bill, but he did ask that the measure be carefully considered, in a memorandum sent to Chairman Doughton of the Ways and Means Committee of the House of Representatives. The bill must be approved by that committee before it can be considered by Congress.

Representative Patrick Boland, of Scranton, Pennsylvania, author if the bill, is from an anthracite

Mud failed to prove an effective barrier to a drilling play in Michigan's newest wildcat strike. Here is one of the 11 locations made within three days of the discovery. The successful test is Chapman Oil, Associated Petroleum and Devonian Oil Company's State 1, Edenville township, Midland County, which made 500 barrels from the Dundee lime at 3792 feet. Thirty strings of tools are expected to be running within the next two weeks.

coal mining district, and the measure obviously is intended, at least in part, to help the coal industry in its competition with fuel oil.

Production at Peak in 1937

Domestic crude oil production reached an all-time high in 1937 at 1,277,653,000 barrels despite steadily contracting markets during the last four months of the year. This figure is from the Bureau of Mines. The gain of 178,000,000 barrels over 1936 was due in part to increased foreign demand as well as gains in domestic consumption.

Not all of the increased output passed into market channels, however, for stocks of all oils at the close of the year were 44,700,000 barrels greater than at the end of 1936.

The year was marked by broad variations in daily average figures. Starting at 3,179,600 barrels in January, there was a continuous increase, with the sole exception of June which was practically offset in July, to an all-time record of 3,712,600 barrels in August, after which each month showed a decline, the year winding up at 3,438,000 barrels for December.

Irregularities Charged

Scandal has reared its head in the Interior Department, where, it is charged by members of the Senate, Secretary Ickes has been remiss in dealing with Tender Board employees who several years ago became involved with an alleged "hot oil operator" in East Texas.

A $200-a-month clerk who allegedly embezzled some $75,000 before he was apprehended precipitated what may turn into an extensive investigation of the Department where, it was further charged, a $100,000 shortage in the cafeteria was "hushed up."

The disclosures of irregularities were made during hearings by the Senate Public Lands Committee on the appointment of Robert K. Burlew, formerly assistant to Ickes, as First Assistant Secretary of the Interior.

Who Owns Ocean Fields

Efforts to secure for the United States government the title to the vast California "off-shore" oil fields will be renewed February 23 when the House Judiciary Committee holds a hearing on the Nye resolution passed by the Senate last August.

The measure instructs the attorney general to establish federal title to the lands, now claimed by the state, on the ground that they lie within the government's jurisdiction—that is, between low-water mark and the three-mile limit.

If the lands were secured by the government, they would be turned over to the navy as a naval oil reserve.

Drilling

TWO NEW pools were opened in Oklahoma, both of them in Okfuskee County. First opener was a Wilcox sand well while the second, four miles southwest, was producing from Dutcher sand. Offsets in the Ramsey pool were drilling below 4000 feet nearing second Wilcox sand.

Kansas opened two new pools last week, one in Rice and the other in Russell County, and reported three others were on the way. The late comers will be in Ellis, and Barton counties. The Padgett pool of Sumner County was extended south.

In North Texas, K-M-A with 169 operations is well ahead of all Texas districts in volume of drilling, while the operators are racing with the inevitable reduction of the current allowable of 58 barrels daily per well. In the meantime the productive area is again extended.

Preparations are underway for an aggressive drilling campaign in Nueces County on the Lower Texas Coast, following a new discovery in an area to be designated either North Agua Dulce or Banquette. Another test in this area is just below the surface pipe on a proposal to get the Cockfield or go to 12,000 feet.

Extension of production at Villa Platte in Evangeline Parish, and a new sand at Charenton, St. Mary Parish, featured the week in South Louisiana. The mile-offshore test in Cameron Parish uncovered enough pressure to require weight in mud.

Prospect as some say that there is an oil field or a series of fields along the Ouachita in a trend southeast from the Schuler field in Arkansas toward the giant Monroe gas field, attracted two drilling starts in North Louisiana.

Market briefs

Outlook—Markets showing some improvement.

Crude Markets—Prices holding.

Refined Oil Markets — Gasoline prices steadier.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
February 5	3,316,450	3,155,000
Previous week	3,357,650	3,170,000
Year ago	3,220,750	2,980,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
January 29	304,286,000
Week before	303,679,000
Year ago	285,384,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
February 5	86,484,000	118,619,000
Week ago	84,844,000	118,433,000
Year ago	70,535,000	101,136,000

DRILLING

Period	Wells Completed
Past week	452
Previous week	463
Year ago	460
Year Total:	
This year	3,213
Last year	3,078

Technology

A VERY important subject at this time is the future of the Pennsylvania Grade crude oil price. Recently the district producing this type of petroleum has experienced several price slashes, which has made it uninviting to continue operation of the numerous stripper wells in the region. The situation has become so severe, the State of Pennsylvania is conducting an investigation at the moment and is threatening state control. A thorough discussion of all the factors influencing the Pennsylvania Grade crude oil price structure therefore is of interest and starts on page 19.

A very interesting well, because if demonstrated to many unbelievers that drilling operations could be conducted in marine waters without pollution, is a test in Galveston Bay. How the owners conducted their work is told on page 16.

Engineers with the Texas Railroad Commission have developed a new and exacting method of determining if natural gas is sweet or sour. It will find many valuable uses. Read it on page 36.

Louisiana Gulf Coast crude reserves continue to increase, according to a recent study, which is discussed on page 49. It is indicated that the region will be of increasing importance as a future producing area. That oil producing companies realize its possibilities is shown by the increase in drilling activity.

Proration Picture

Emergency orders cut Oklahoma production 35,000 barrels daily . . . Other states may follow suit . . . Funds for Bureau of Mines forecasts are asked.

A VERY encouraging development last week was the emergency order that reduced Oklahoma's allowable 35,000 barrels daily to 500,000 barrels, retroactive to February 1. Approximately 40,000 barrels of crude have been going into storage daily in the state, and purchasing companies were cutting their takings in many areas.

Meanwhile it was indicated that other Mid-Continent states might follow suit, and that as much as 400,000 barrels daily might be cut from the United States output. Gasoline and crude stocks have been gaining steadily, with the former now at an all-time peak. Consequently, there have been rumors of a price cut prevailing for some time. Such curtailment as that proposed probably would avert such action.

Oklahoma order cuts output to 500,000 barrels

In a surprise move February 9, members of the Oklahoma Corporation Commission signed the emergency order submitted by W. J. Armstrong, chief conservation officer, cutting the February crude oil allowable for Oklahoma to 500,000 barrels daily, retroactive to February 1. The measure will be ratified at a meeting of operators February 17 and will be passed on the following day.

Legality of the move probably will not be challenged, Armstrong said. It is understood the commission has the authority to approve such a measure if it is accompanied by evidence. An affidavit by Armstrong and 15 to 20 letters and telegrams from producers and purchasers will be attached to the order.

It was thought the action had been temporarily stopped when, following a meeting February 8, it was announced the commission could not agree on the course of action. Only two of the commission's three members could attend, Jack Walton and A. S. J. Shaw. Walton favored immediate approval of the move and Shaw objected on the grounds it should be given a formal hearing after the usual 10 day's notice. Illness prevented Chairman Reford Bond from attending the meeting.

Armstrong proposed the emergency measure after a survey of conditions showed approximately 40,000 barrels of oil were going into storage daily. Contact with producers revealed they favored another reduction in allowable in preference to a price cut. The new allowable reduces production in prorated areas about 10 percent. No change is to be made in stripper areas, which at present have an allocation of 164,507 barrels daily.

The reduction is necessary immediately to avoid waste, Armstrong stated. The change follows closely the announcement two weeks ago that Sinclair Prairie Oil Marketing Company was cutting its purchases 10 percent below its allowable for the month. The company has been taking 61,000 barrels of oil daily in Oklahoma.

National reduction proposed

Hinging on this action just taken by Oklahoma was the announcement by Art L. Walker, secretary of the Interstate Compact Commission, that that body had been promised the cooperation of other Mid-Continent states in reducing their allowables to about 14 percent below the Bureau of Mines estimates for January.

Such action, Walker said, would cut approximately 400,000 barrels daily from national production, but probably could not be expected to come about before March. This condition would not have resulted, Walker contended, "if the states had held within the Bureau of Mines estimates during 1937."

The cut-back as recommended by the compact would give Texas 1,195,000 barrels daily, Oklahoma 500,000 barrels daily, Kansas 150,000, Louisiana 210,000, California 608,860, New Mexico 92,250, Arkansas 33,000 and Illinois 26,000 barrels. Other states would take a proportionate reduction.

Kansas shuns proposed allowable reduction

The suggestion that Kansas reduce its allowable in helping other states balance supply with demand, was answered late last week by E. B. Shawver, president of the Kansas Independent Oil & Gas Association with the assertion the state "is doing its part."

Shawver answered the proposal that Kansas cut its allowable to 154,000 barrels daily by saying "Kansas is now running only about 162,000 barrels daily, which is 19 percent below the peak allowable of the Bureau of Mines allowable for January."

Shawver said the state allowable had been cut every month since last August with the exception of January.

Bureau forecasts funds

Inclusion in the 1939 appropriation bill for the Interior Department, now being drafted, of sufficient funds to enable the Bureau of Mines to continue its regular forecasts of oil demand was asked of the House Appropriations Committee February 8 by Representative Dockweiler of California.

"These forecasts," the Congressman declared, "are essential to the oil producers in California to conduct their business properly." He urged that there be no reduction in the appropriation for the bureau which would affect its statistical work.

Representative Dockweiler also requested that funds be included in the bill for establishment of an office of the Bureau of Mines in Los Angeles.

Protests against reduction of the bureau's appropriation also were made by Rush B. Blodgett, executive vice president of the Oil Producers Agency of California, and Lawrence Vander Leck, chairman of the central committee of California Oil Producers.

Discontinuance of the monthly forecasts of demand was urged by Paul D. Hadlick, counsel for the Independent Oil Marketers Association, who asserted the reports were being used by the integrated companies to further their monopoly of the oil industry.

Schuler hearing set

The Arkansas Board of Conservation will meet at El Dorado February 21 to discuss rules and regulations governing drilling and production of wells in the Reynolds (Permian) lime of the Schuler field, Union County. This horizon at present has only one producer, a gas-distillate well, but several presently drilling operations are designed for that horizon.

On February 14, the board will be defendant in an action in the state court at Texarkana in an injunction proceeding brought by William Monroe Layton to restrain the board from prorating his wells in the Miller County extension of Rodessa.

Suit attacks Oklahoma City proration orders

A federal court injunction suit filed at Oklahoma City last week reopened the fight against proration orders restricting production from the Wilcox sand zone of the Oklahoma City field. Requested by Natural Gas Development Company, the injunction, if granted, would have a far reaching effect on the city field. By throwing out every order covering the zone issued by the corporation commission since December, 1931, it would be likely to precipitate a mad scramble for production from the 636 wells in the zone at present.

The company owns 13 wells producing from the Wilcox zone and located on its Westgate-Cary lease, and claims that commission orders have caused confusion and discrimination in favor of some producers, while others are not receiving their share of production.

Attacking the minimum allowable of 250 barrels as being too high, the petition states, "In many instances, wells on minimum allowables receive 10 times greater percentage of potential than the percentage allowed plaintiff. This has resulted in unfair and unjust discrimination."

This is the second attempt of the company to gain an adjustment of allowable, their first application having been filed last December, but was dismissed on a demurrer January 17.

Operators in the area agree that if the company wins its fight for the or-

[*Continued on page 60*]

Labor Situation

Mexican negotiations fail . . . Pennsylvania hour law challenged . . . Expect ruling on Pennsylvania compensation law . . . Canada has labor shortage

T. R. ARMSTRONG of New York, executive of Standard Oil Company of New Jersey, February 10, reported it had been found impossible to reach an agreement in Mexico, from whence he returned February 9, notwithstanding he had gone there at the invitation of the Mexican government to negotiate for the major petroleum companies a settlement of the labor controversy.

This was the most important labor development last week. Meanwhile, in Canada operators at Turner Valley were again threatened with a shortage of skilled workers and violation of the government's six-day week order was becoming common. It also became apparent last week that a constitutional ruling on Pennsylvania's new workmen's compensation law could be expected shortly after the March term of the state Supreme Court.

Misunderstanding in Mexico said to be cause

Only one phase of the labor difficulties in Mexico were settled during T. R. Armstrong's stay, it developed last week. The first and immediately pressing matter, which was the provision of a bond by the companies to make effective the temporary suspension of the recent decision of the Federal Labor Board pending a ruling from the Supreme Court of Mexico, was settled when the companies agreed to post a bond of 3 million pesos. Briefs have been submitted to the court questioning the legality of the board's answer, and it is expected that a finding will be had in two months.

Other points at issue apparently are as far from settlement as they were December 31, when the board of arbitration laid down conditions the oil companies said they could not meet and continue in business. On this point, Armstrong said that the oil companies had submitted a reasonable offer. "It developed, however," he said, "that the situation was deadlocked by reason of a fundamental misconception of the industry's capacity to survive under the exhorbitant stipulations of the Federal Labor Board's order. The (labor) syndicates and the Federal Labor Board base their case on two theories, both of which I consider absolutely unworkable. The first theory is that the only criterion as to what pay and other sonsiderations labor should receive is the maximum capacity of the oil industry to yield. In other words, whether existing wages and working conditions are reasonable or otherwise has no bearing on the problem. The amount which the Federal Labor Board states the oil companies could afford to pay exceeds the average of the industry's profits for the past three years.

"The second theory is that the (labor) syndicate should have a controlling voice in the administrative matters which are essentially the obligation of management.

"The oil companies' offer, based on non-interference in management, and the assumption that no burdens in addition to those already put on the industry will be imposed, is several times the average real wage paid elsewhere in Mexico."

Judge Armstrong sounded a note of warning when he stated, "To attempt to carry on operations under the terms of the federal board's award is impracticable." However, he declared the oil companies are not planning to abandon their investments in the country.

Labor demand causing Canadian complications

With several tests having spudded in recent weeks and at least six more to start operations this month, Turner Valley operators are again threatened with a shortage of skilled workers for drilling crews, and violation of the Alberta government's six-day week order is becoming common. Although many drillers imported from the United States to help carry on the intensive development program of the Turner Valley crude area last summer had left the field, there was still a surplus of workers for well crews when the short week order was issued several months ago.

The situation, however, has since changed, and every available driller is being picked up for work on new crews. Operators with more than one rig are having difficulty maintaining swing crews for continuous operations and in many cases swing crews have been started on new rigs. Roughnecks are technically complying with the law by working only six days a week with a well crew and spending their "off day" working at another rig as a replacement, thereby nullifying the intent of the government order. Rather than have Alberta companies import workers from the United States who would result in a labor problem if operations were slowed down next winter, many workers favor a return to the seven-day week.

Pennsylvania compensation

A constitutional ruling on Pennsylvania's new workmen's compensation law, which became effective January 1, may be made shortly after the March term of the state supreme court to be held at Pittsburgh, it became apparent as state officials proceeded with final arrangements early last week to bring the law before the high court for review.

For several weeks attorneys for firms protesting the act and the state attorney general's office have been working on a set of facts so the high court could be petitioned to take original jurisdiction, thereby eliminating lengthy proceedings in lower courts. Failure to agree immediately on the set of facts precluded a supreme court review of the law at its January session.

The new law, which "liberalizes" a former statute, would increase the maximum benefits from $15 to $18 a week and raise minimum payments for disability from $7 to $12 a week. The constitutional test is being made on the ground that the law, which would broaden the employer's liability for diseases and infections resulting from hurts, would increase the cost of insurance, that it would make employers liable for injuries received elsewhere than on their own property, that they would be liable for an injured employe not working in accordance with the law, that compensation would be allowed in excess of wages received by many workers and that the compensation board could arbitrarily say what the future earnings of the injured shall be.

Pennsylvania working hour law suit

Meanwhile, Pennsylvania's new 44-hour week law, described as one of the most drastic pieces of labor legislation enacted by any state, was threatened by a taxpayers' suit which may bring its suspension for all industry. Extended hearings are now being conducted in Dauphin County court at Harrisburg on a suit originally filed by a manufacturing firm of Kane in which approximately 700 other firms and employers have since filed petitions as interveners. Under a court order, enforcement of the act against intervening firms is halted pending determination of the Kane company's attack on the law's constitutionality.

An injunction on the taxpayers' suit filed last week, however, would automatically replace that now being heard and suspend operation of the law against all industry. A hearing on the new suit was to be held late last week at which time the state must show cause why the injunction should not be granted. The petition, filed by Willis F. Daniels, former state attorney general, on behalf of C. W. Miller, Perry County, and Foster Brinser, Middletown, charged that the law imposed an "unjustifiable burden" on taxpayers of the state and that state funds were "being expended for an unlawful, illegal and unconstitutional purpose."

In the course now being followed in obtaining a constitutional ruling on the act, testimony is being taken in Dauphin County court from a number of firms so as to reach an agreement on facts which will permit a review by the state supreme court in March. A hearing in March would not make possible a ruling before June, said Deputy Attorney General Edward Friedman, charged with defending the act.

Legislation Trends

Fuel oil tax sought . . . Roosevelt sees shortage, but Thompson does not . . . Federal title to ocean fields urged . . . Uphold Pennsylvania injunction.

THERE is danger of an immediate shortage of crude oil in the United States, and our supply must be conserved.—President Roosevelt.

Therefore, let us place a one-cent levy on fuel oil used for heating as a conservation and national defense measure.—Representative Boland of Pennsylvania's coal district.

There is no immediate danger of an oil shortage.—Colonel E. O. Thompson, chairman of the Interstate Compact Commission and member of the Texas Railroad Commission.

These were the conflicting views that stirred legislative circles in Washington last week, when President Roosevelt expressed alarm over the reserve situation and asked Congress to consider a "small tax on rude petroleum, not only for producing revenue but also for the purpose of conserving our oil reserves both for industry and national defense."

Did the President mean "crude petroleum" or fuel oil? This he refused to clarify later in the week.

Other legislation affairs of the week included a proposal that the federal government take over title to large oil-bearing areas lying off the coast of California, and the failure of a court to dissolve an injunction halting operations of a Pennsylvania legislation investigating committee.

President sees oil shortage

Reference by President Roosevelt to a tax on "crude oil" in a letter to Representative Patrick J. Boland (Dem. Pa.), author of a bill to impose a tax of one cent per gallon on fuel oil used for heating purposes, last week injected an element of uncertainty into the situation which the President on Friday refused to clarify when questioned by newspaper men.

Boland, who has been attempting to get a tax on heating oils for several years for benefit of his anthracite coal-producing district, recently appeared before the House Ways and Means Committee during its hearings on tax revision to urge the proposal, as a conservation and national defense measure.

Later with Representative Flannery, from an adjoining district, and Senator Guffey, he went to the White House to beseech the President's support, and the President asked Secretary of the Interior Ickes to submit a report on the situation, together with information on reserves of oil in the ground.

The secretary's report, consisting mainly of a copy of a recent report made for Governor Marland of Oklahoma by Alex W. McCoy, Ponca City petroleum engineer, and submitted to the conference of governors last month, in which reserves were held liable to exhaustion by 1941 (see THE OIL WEEKLY, January 31, 1938), was forwarded by the President to Chairman Doughton of the Ways and Means Committee, Chairman Vinson of the Tax Subcommittee and Congressman Boland.

In an accompanying letter, Roosevelt said "This is sent to your committee because there has been raised the question of placing a small tax on crude petroleum, not only for the purpose of producing revenue but also for the purpose of conserving our oil reserves both for industry and national defense.

"With regard to reserves, it is somewhat more alarming than I had previously believed. For instance, present drilled reserves are estimated to be capable of supplying demand only through November, 1941, and to meet expected demand during 20 years to come it would be necessary, in addition to production from known reserves, to discover 28 billion barrels of new oil. Such new discoveries would have to be made at a rate of discovery greatly exceeding discoveries made during the past seven years."

In view of the fact that the new tax bill is expected to provide for repeal of present production and processing taxes and no consideration had been given by the Ways and Means Committee of a tax on crude oil, the President's reference to that product created considerable interest.

It was generally considered that the President's choice of terms was merely a mistake but when questioned at the semi-weekly press conference February 11, he said only that his questioner knew as much about the situation as he did.

Thompson denies shortage

An assertion that there is no immediate danger of an oil shortage, at least so far as Texas is concerned, was contained in a letter sent to President Roosevelt last week by Ernest O. Thompson, member of The Texas Railroad Commission.

Press accounts indicating that the President was alarmed over a prospective shortage of petroleum led Thompson to send the information. He pointed out that he was informed that the alarming figures had been presented to the President as proof for the need of the enactment of a bill introduced by Guffey of Pennsylvania which provides for a tax of 42 cents per barrel on fuel oil. By this tax the Pennsylvanian hoped to reduce the fuel oil market and conserve this oil for other purposes, according to reports received in Austin.

With each letter sent, Thompson forwarded a map showing the 94 new fields and extensions which had been discovered in Texas last year.

"Last year," he said, "Texas produced and sold 500,000,000 barrels of oil, which at $1.20 per barrel, brought in over $600,000,000 to the State of Texas. This is about $100 per person for each man, woman and child in the state.

"We not only produced all the oil we could consume and sell last year, but increased our reserve more than half a billion barrels.

"Drilling is going on at a rapid rate in Texas. There need be no cause for alarm anywhere because of the probability of crude playing out. On the contrary, our problem will be, as it is now, to find markets for our petroleum and its products. Texas stepped out last year and increased her market demand by 90,000,000 barrels over 1936. These 90,000,000 barrels were sold at an average of $1.20 per barrel, which brought into Texas more than 100,000,000 bright new dollars from the same old stand.

"New discoveries in Texas this year have made it possible, under proration and conservation for individual producers to develop their property on money borrowed at low rates on long time, which puts them on an equality with the big companies.

"We have 1141 more producers than we had 2 years ago, all hiring people on the highest wages known to any industry.

"We have this map and letter sent to you so that you may know there is no shortage, nor is there any imminence of shortage, in petroleum.

"We do not intend to produce more oil than the market demands. Texas is not letting anyone else run away with the oil market. We shall continue pushing out for new outlets for Texas products.

"Some observers expressed the opinion that the prime purpose of the Guffey bill was to increase the market for cheap coal, rather than to conserve oil. At present prices coal cannot compete with oil."

Washington has envious eye on off-shore oil

Legislation looking toward the establishment by the Federal Government of title to large areas of oil-bearing lands lying under water off the coast of California will be considered by the House Judiciary Committee at a hearing it has called for February 23.

The committee will have before it the resolution introduced last year by Senator Nye (Rep., N. Dak.), instructing the attorney general to move, by suit or otherwise, to establish the title of the United States to the California "off-shore" oil lands and remove and eject persons now occupying them or removing the petroleum deposits therefrom. The measure was passed by the Senate August 19, last.

Introduction of the resolution followed an interchange of letters between Senator Nye and Attorney General Cummings, in which the latter took the position that the Department of Justice should make no move while legislation was pending in Congress, this referring to a bill introduced by the Senator in April declaring lands under territorial waters of the continental United States to be part of the

[*Continued on page 58*]

Results Satisfactory in Early 1938

Strict control of crude production and curtailment of refinery operations promote steadier markets . . . Large gasoline stocks represent chief problems now . . . Drilling is seasonally lower

By L. J. LOGAN, Associate Editor

THE outlook for the oil industry remains hopeful, despite the fact that the early part of the new year has brought a continuation of unsteady markets.

For in view of the unsettled markets and some evidence of a less favorable demand situation, crude oil production is being held down very strictly and refinery operations also are being restricted within economic limits. And these restraints at wells and refineries are helping to maintain prices of crude oil and products at the established levels.

Gasoline Market Disturbing

As in earlier months, the weak gasoline market continued in January as the most serious problem in the oil industry situation; and in February, also, it remains a matter of primary concern.

The gasoline market never has recovered from the over-building of stocks that occurred a year ago, when exceptionally heavy fuel oil demand necessitated overproduction of gasoline.

For after the gasoline stocks rose in March, 1937, to what was then an all-time peak of 83,538,000 barrels, they could not be reduced satisfactorily, even with the benefit of record consumption. And in the past fall and this winter, the situation has been aggravated by a recurrence of the events of a year ago; as heavy fuel oil demand again has forced the making of more gasoline than the market has been able to absorb.

Serious Problem Exists

In view of these developments of the past year, it appears that the industry may have on its hands more than merely a temporary problem as regards the gasoline market.

Certainly, there is danger that the gasoline market may remain disturbed throughout the year, because of burdensome stocks; despite the special efforts now being made to hold down output at the refineries.

For already the gasoline inventories are far out of line with market conditions, and correction of the situation will be very difficult, particularly under the present handicap of less brisk demand.

Fuel Oil Causes Trouble

Furthermore, there has not been achieved, so far, any solution of the perennial problem that has been raised by the vigorously growing requirements for fuel oil.

Apparently, fuel oil demand is destined to continue comparatively heavy henceforth every fall, winter, and spring, because of the large number of domestic and commercial oil burners that have been sold and installed in recent years. For consumption of fuel oil by these burners, for heating purposes, probably will prove relatively stable, irrespective of general economic conditions. That consumption may be as stable as the use of gasoline, if not more so.

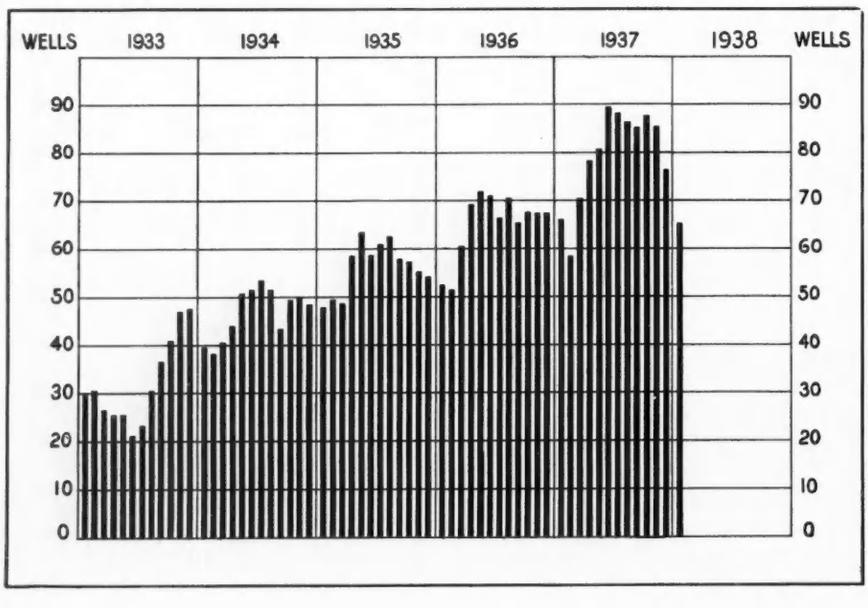
Consequently, there is a definite danger that the petroleum industry in coming winters again may have difficulty in holding gasoline output within market requirements while turning out sufficient fuel oil to supply the demand for that product.

Gasoline Yield Reduced

To some extent, the problem has been combated this winter and last winter by reducing the yield of gasoline from a barrel of crude at the refinery. But that procedure has not proved adequate to solve the problem. And furthermore, it is a remedy of questionable soundness, as it involves the sacrifice of a more valuable product for an inferior product.

U. S. Drilling Seasonally Slower in January

Chart Shows Average Number of Wells Completed Daily (By Months, January, 1933—January, 1938)



Demand and Inventory Situation

(Figures, indicating barrels, are from Bureau of Mines)

ITEM	FIRST 11 MONTHS 1936	FIRST 11 MONTHS 1937	Change of 1937 from 1936	NOVEMBER 1936	NOVEMBER 1937	Change of 1937 from 1936
Demand:						
All Oils	1,112,756,000	1,227,478,000	+10.3%	104,941,000	114,153,000	+ 8.8%
Gasoline, Domestic	442,198,000	479,303,000	+ 8.4%	39,919,000	42,666,000	+ 6.6%
Gas and Fuel Oil, Domestic	366,499,000	398,350,000	+ 8.7%	36,023,000	37,696,000	+ 4.6%
Stocks, End of Mo.:						
Crude Oil	.....	.....	.....	288,998,000	305,747,000	+ 5.8%
Refined Oils	.....	.....	.....	229,122,000	250,773,000	+ 9.4%
Natural Gasoline	.....	.....	.....	4,153,000	5,147,000	+24.0%
All Oils, Total	.....	.....	.....	522,273,000	561,667,000	+ 7.5%
All Oils, Days' Supply	.....	.....	.....	149	148	+ 0.7%

Eventually, the problem must be settled by the establishment of price levels for fuel oil and gasoline that will induce the production of marketable quantities of each of the two products.

And it may come to pass that this readjustment of prices may have to involve a revaluation of the two products to make fuel oil prices relatively better and gasoline prices relatively lower.

In any event, the economic forces have been working for some time in that direction. Fuel oil prices moved upward last summer and early fall, and have held the higher ground; while gasoline prices have declined materially in the past 4½ months, and still remain depressed.

In the long run, over a period of years, gasoline production will have to be held down within market requirements, even if the holding down of gasoline output must necessitate curbing of fuel oil production and resultant higher fuel oil prices

But this eventual stabilizing of gasoline and fuel oil production within desirable limits may be a year or several years off, it appears, in view of the results in the past two years.

And in the meantime, considerable difficulty may be encountered in maintaining satisfactory prices, particularly of gasoline.

Gasoline Stocks High

Although the excessive gasoline stocks had been causing anxiety for several months previously, they attracted particular attention in the latter part of January, when they increased to unprecedented proportions.

In the week ended January 29, the total stocks of gasoline reached 84,844,000 barrels, rising above the previous all-time peak of 83,538,000 barrels that was established March 27, 1937. And in the week ended February 5, they increased 1,640,000 bar-

[*Continued on page 60*]

Changes in Stocks Since End of November

(Crude stocks figures are from Bureau of Mines weekly reports; others are from American Petroleum Institute weekly reports.)

DATE	Crude Oil (Barrels)	Gasoline (Barrels)	Gas and Fuel Oil (Barrels)
November 27, 1937	304,156,000	68,544,000	121,616,000
December 4, 1937	303,034,000	70,193,000	121,329,000
January 1, 1938	303,468,000	77,291,000	118,660,000
January 29, 1938	304,286,000	84,844,000	118,793,000
February 5, 1938	.....	86,484,000	118,619,000
February 6, 1937	†285,384,000	70,535,000	101,136,000
Change in past year	+6.6%	+22.6%	+17.2%

* All time peak. † Stocks January 30, 1937.

United States Drilling and Production, January, 1938, and 1937

January completions cover not the calendar month, but the five weeks, or 35 days, ended January 29, whereas completions shown for January, 1937, cover only four weeks, or 28 days. Production on the other hand is for 31 days in both years.

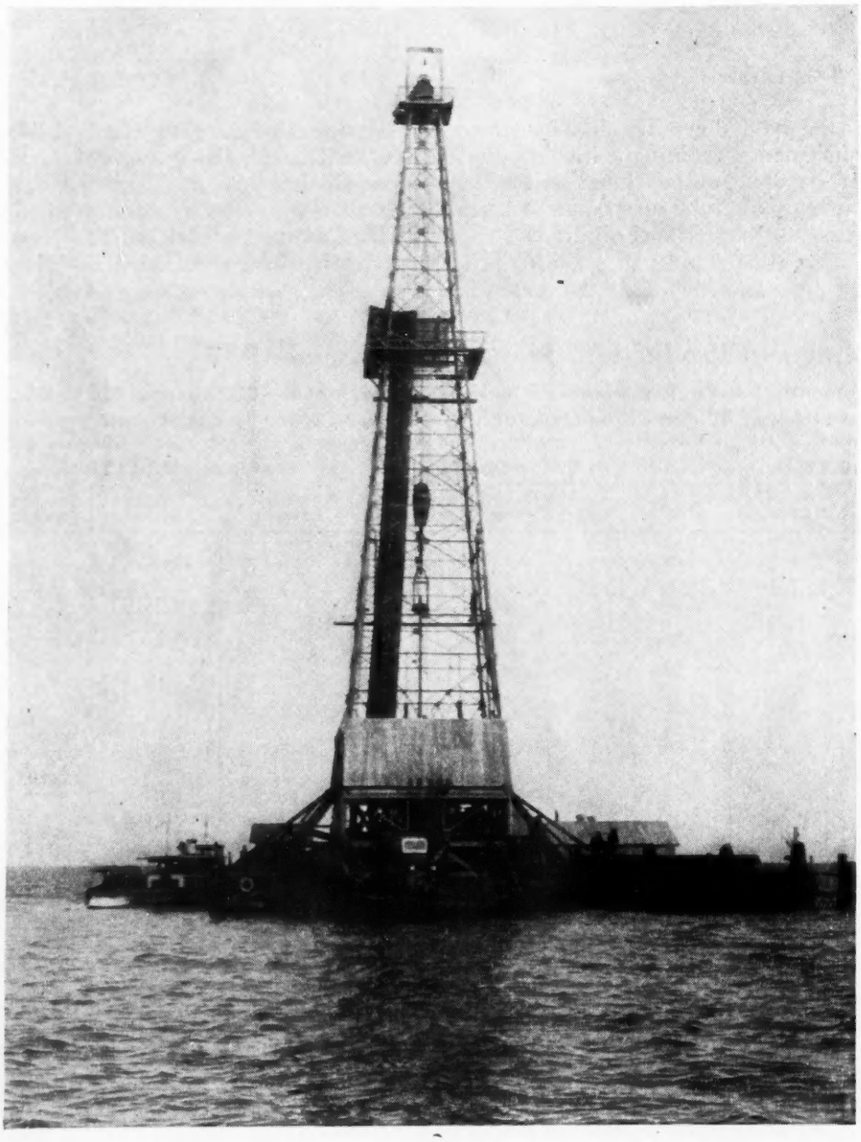
STATE OR DISTRICT	WELLS COMPLETED 1938: 1 Month	WELLS COMPLETED 1937: 1 Month	WELLS COMPLETED Percent Change	DETAILS OF 1938 DRILLING Oil	Gas	Dry	Initial Production	BARRELS PRODUCTION 1938: 1 Month	1937: 1 Month	Percent Change
Arkansas	21	.....	.....	18	...	3	17,035	1,301,150	818,650	+ 59
California	101	76	+ 33	82	1	18	60,983	22,214,000	18,270,600	+ 22
Colorado	2	2	.....	.....	...	2	.....	136,250	109,800	+ 24
Eastern States	373	276	+ 35	119	131	123	14,287	4,165,250	3,579,850	+ 16
Illinois	83	....	.....	49	...	34	13,059	.....	.....	.....
Indiana	6	....	.....	1	3	2	5	.....	.....	.....
Kentucky	67	....	.....	25	17	25	558	.....	.....	.....
New York	5	....	.....	....	5	...	.....	.....	.....	.....
Ohio	96	....	.....	27	32	37	505	.....	.....	.....
Pennsylvania	23	....	.....	3	15	5	90	.....	.....	.....
West Virginia	93	....	.....	14	59	20	70	.....	.....	.....
Kansas	204	146	+ 40	128	20	56	166,573	5,566,500	5,241,100	+ 6
Louisiana	114	38	+200	70	5	39	40,185	7,778,600	7,580,200	+ 3
North Louisiana	48	11	+336	40	5	3	27,095	2,454,600	2,417,900	+ 2
South Louisiana	66	27	+144	30	...	36	13,090	5,324,000	5,162,300	+ 3
Michigan	72	72	.....	52	1	19	11,782	1,540,500	904,250	+ 73
Montana	5	7	— 29	3	...	2	130	429,800	512,550	— 16
Nebraska	....	....	.....	....	...	...	.....	.....	.....	.....
New Mexico	48	52	— 8	44	1	3	29,503	3,320,400	2,863,300	+ 16
Oklahoma	204	218	— 6	125	18	61	35,141	16,859,900	18,206,800	— 7
Southeastern States	2	....	.....	....	...	2	.....	.....	.....	.....
Alabama	....	....	.....	....	...	...	.....	.....	.....	.....
Florida	....	....	.....	....	...	...	.....	.....	.....	.....
Mississippi	2	....	.....	....	...	2	.....	.....	.....	.....
Texas	1,142	953	+ 20	887	44	211	1,455,866	41,677,700	32,250,950	+ 29
East Texas Field	232	144	+ 61	226	...	6	1,096,178	14,643,050	13,902,660	+ 5
Rest of East Texas	54	68	— 20	46	1	7	20,474	2,655,700	3,154,250	— 16
North Texas	165	144	+ 15	105	...	60	53,184	2,167,650	2,023,800	+ 7
South Texas	222	275	— 19	134	16	72	48,348	7,132,050	5,776,500	+ 23
Texas Gulf Coast	138	96	+ 44	109	5	24	45,094	5,995,650	5,552,100	+ 9
Texas Panhandle	84	41	+100	62	20	2	28,037	2,144,150	2,102,800	+ 2
West Texas	230	150	+ 53	199	2	29	164,251	5,956,600	5,286,950	+ 13
West Central Texas	17	35	— 51	6	...	11	300	982,850	1,014,800	— 3
Utah	....	....	.....	....	...	...	.....	.....	.....	.....
Wyoming	8	10	— 20	4	2	2	1,960	1,524,400	1,474,250	+ 3
	2,296	1,850	+ 24	1,532	223	541	1,833,445	106,514,450	98,375,100	+ 8.3

Special Measures

PREVENT

Galveston Bay Pollution

By CHARLES B. LEYENDECKER
Staff Writer



THERE was little chance of blow outs or pollution while drilling Standard Oil Company of Texas and Salt Dome Oil Corporation's State 1, mile off shore of Chambers County, in Galveston Bay, Texas. Every precaution known in modern drilling engineering was used on this wildcat. Pressure was on the operators while drilling State 1, because of objections by some to drilling in the bay.

Standard Oil Company of Texas operated the wildcat, and it was the first well in the Gulf Coast for the company. Company engineers planned the drilling far in advance. After the plans had been drawn, the contract for drilling was given to Loffland Brothers.

Piling was used as derrick foundation and pipe racks. Three pilings were driven in groups out from the derrick for guy wires. Four heavy wires were suspended from the derrick to each of the four

●

Every precaution against blowouts and pollution was taken in drilling in this wildcat on Galveston Bay of Standard Oil Company of Texas and Salt Dome Oil Corporation.

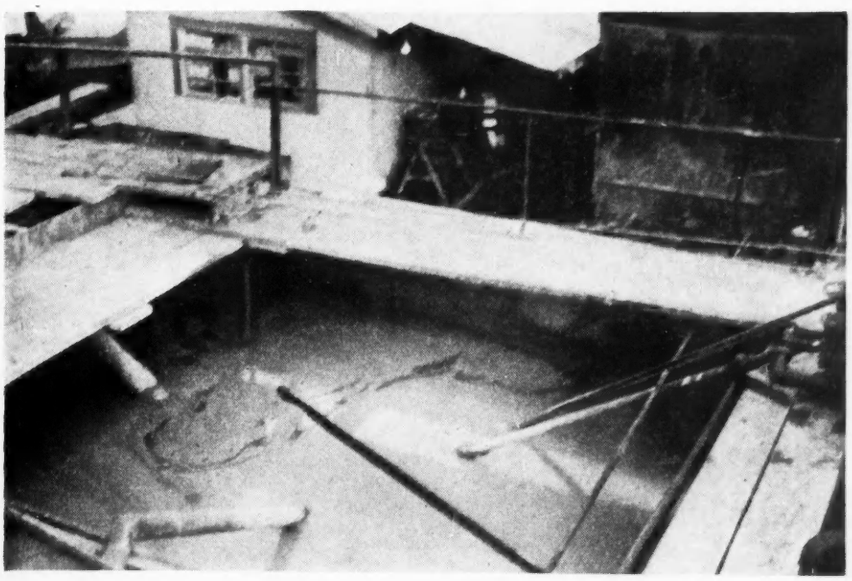
groups of piling. This precaution was taken against strong winds, which might blow the derrick over.

After the derrick had been constructed and all equipment installed, two floating barges were moved in. These barges, specially constructed at Orange, Texas, were floated next to the piling and tied in place. Unlike barges used in South Louisiana they floated continuously. The outer barge housed two large Diesel engines, which ran two large direct-current generators. On the second floating barge, which is tied next to the piling, were the mud pits, shale shaker and two slush pumps. Connections between the two barges and the derrick were flexible hoses and rubber covered wires.

It can be seen that the Diesel-electrical rig would cut down the fire hazard. Special placed signs cover the derrick designating no smoking. It is likely that any one caught smoking around the well would get a good salt water bath in the bay.

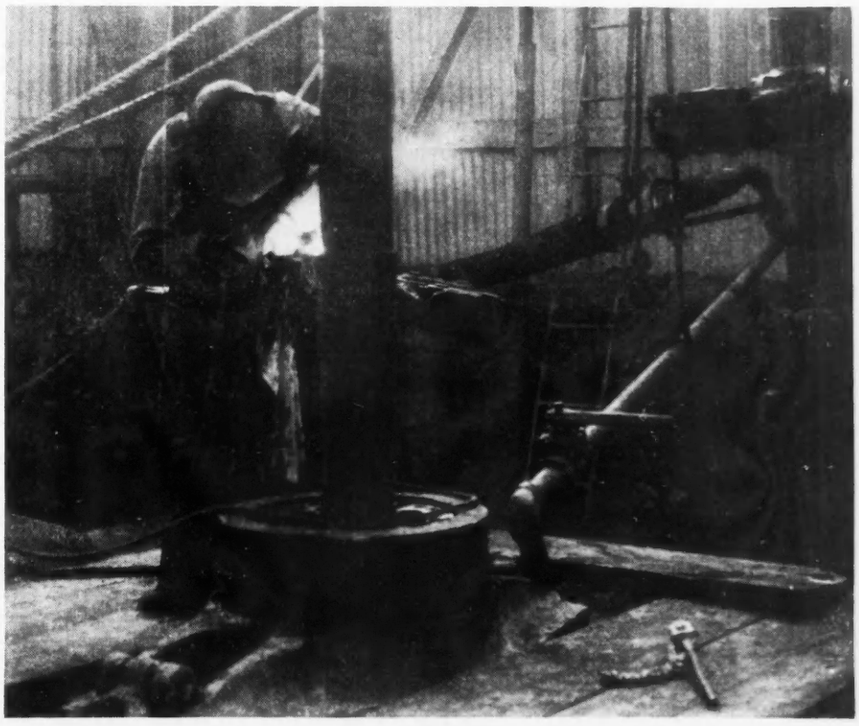
Pollution Prevented

At no time while moving in equipment on State 1 was the water polluted. Standard Oil Company of Texas was particular about this matter. To overcome the chances of blowouts, if sands were encountered, the operators drove 77 feet of 24-inch drive pipe and cemented. The company set 16-inch casing at 268 feet, and allowed it to set overtime. After the hole was carried to 1856 feet an electrical logging device was run to determine the formations drilled. A string of 10-inch casing was then



G. V. Lund, district superintendent for Standard Oil Company of Texas, is smiling—and no wonder. The first wildcat drilled by the company in the Gulf Coast may produce, and was drilled without pollution of Galveston Bay.

No chance of pollution around this barge. Even the mud pits are enclosed in steel tanks. Note the oil on the mud. It is one of the shows encountered by State 1 and which is to be given a production test immediately.



Some of the seven-inch casing run in State 1 was welded. In order to avoid all possible dangers of a blowout, casing was run to 6030 feet without the usual drill stem test being made.

set at 1856 feet, making three strings of well-cemented pipe in the hole.

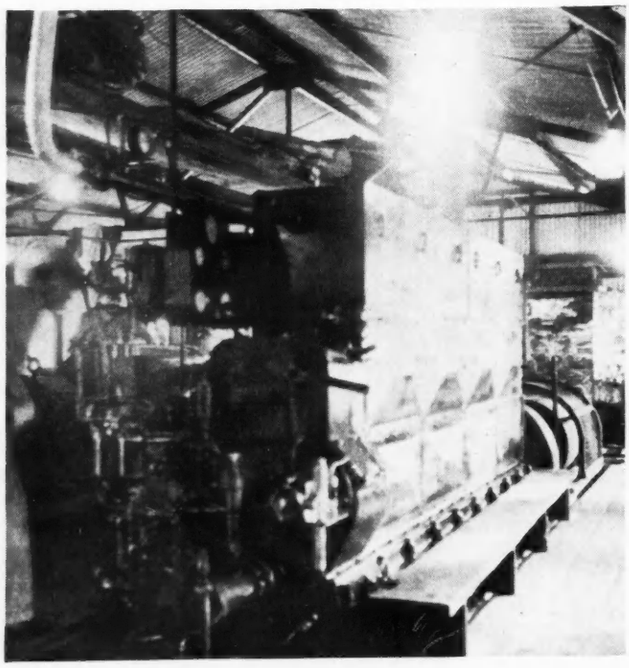
Instead of installing one or two blowout preventers, as is being done by operators who drill 10,000-foot tests or wells which produced and have pressures of 4000 pounds, the Standard Oil Company of Texas installed three heavy tested preventers. To be doubly sure of no blowouts, heavy master gate valves were used as equipment also. Both the blowout preventers and gate valves could be controlled from off the derrick floor, which would make it easy for any of the crew to shut the well in if it kicked out.

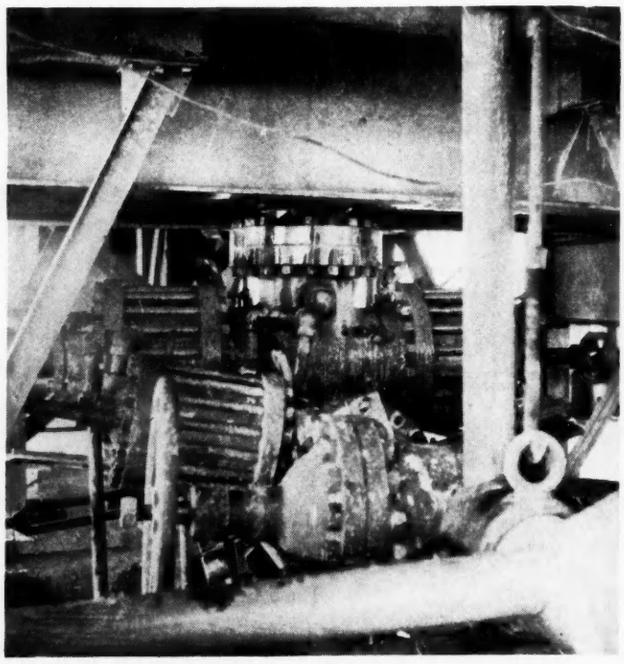
Pollution was a problem for Standard Oil Company of Texas at Galveston Bay. This was closely watched by uninterested parties and was one of the main objections to drilling in the bay. However, the operators knew this, and installed tin pans under every piece of equipment that used oil. Under the derrick floor was a pan and all waste material fell into this pan and ran down troughs to a sump pit. Around the barges were troughs. Waste material was transferred from the sump pit to a barge and carried to land and burned. When visiting the well no pollution could be seen.

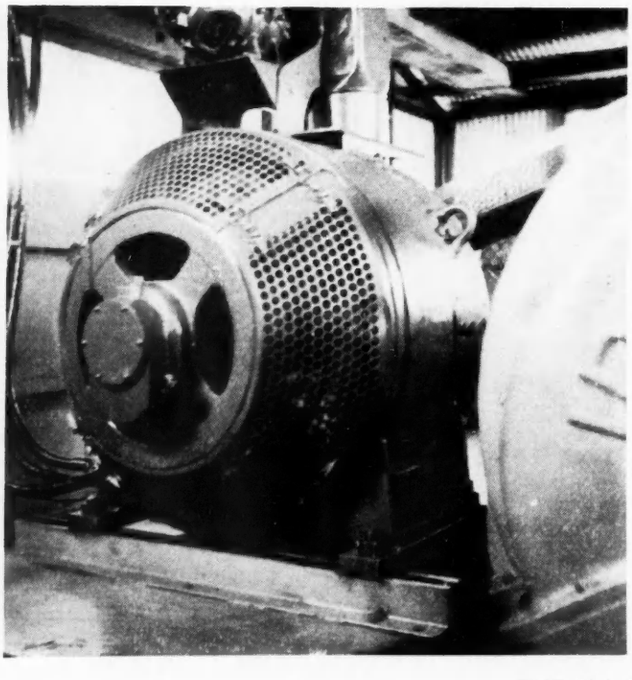
Besides all the extra precautions taken against blowouts and pollution already described, extra heavy mud was used.

State 1 was preparing to make a production test last week, and may open a new oil field. On the Discorbis, encountered at 5136 feet, it was 500 to 600 feet higher than a well 6000 feet north. From 5835 feet to 6030 feet, State 1 logged broken formation showing oil and gas. The best sands are believed to be the ones encountered from 5915 to 5921 feet, 5956 to 5963 feet and 5964 to 5967 feet.

Instead of taking the usual drill stem test, the company, still having in mind pollution and blowouts, set 7-inch casing. Several of the first joints of pipe were welded.







Here is some of the equipment used in drilling State 1 on Galveston Bay. Power was furnished by two large Diesel engines, one of which is shown in the photographs. The Diesels drove two large generators, the power thus generated was used for all drilling operations. The engines and generators were installed on one of the two drilling barges used. State 1 had little chance of blowing out, as three blowout preventers were used, as well as extra heavy master gates. The large wheels shown in this picture are for operating the blowout preventers in case the well kicked out, making it possible to do so at a remote location.

The Pennsylvania Grade Crude Oil Price Structure

By SYLVAIN J. PIRSON

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ONE of the main problems oil producers face constantly is that of forecasting future trends of crude oil prices. One may realize the importance of this question by considering what pains it takes to reduce the cost of producing oil a few cents per barrel when these savings may be eradicated by a sudden and profound price cut. Of course, producers contend that the way to operate is to manage a safe margin of profit, to develop and operate only those properties that guarantee sufficient return in view of the present as well as the future oil prices. Yet, the factors influencing crude oil prices are numerous and complex, and perhaps can never be singled out and weighed properly. This is particularly true of Pennsylvania Grade crude oil prices. One need only examine Figure 1, which compares Pennsylvania Grade crude prices with a representative Mid-Continent crude, to realize that price variations in the Appalachian Region are more profound.

In order to be predictable, prices of commodities must be determined in a competitive market. This has been the case for the petroleum industry for a very short period only; from the year 1911, which marks the end of monopolized or non-competitive conditions by the dissolution of the Standard Oil Trust, until about 1930 when proration made its appearance on a generalized scale. In the Appalachian Region proration is not in effect, at least not as a state institution and consequently the character of the crude oil market is of the competitive type, i. e., where the law of supply and demand has its free play. More particularly, the Pennsylvania Grade crude is sold on a market of its own, relatively free of influences from other crude oil markets as will be pointed out later.

Price History

In Figure 1 the price variations are shown on semi-logarithmic paper, which has the desirable property of representing constant rate of increase or decrease by straight lines. In this manner a more definite correlation may be established between the two curves although we are more concerned here with the study of the effect of oversupply on oil prices.

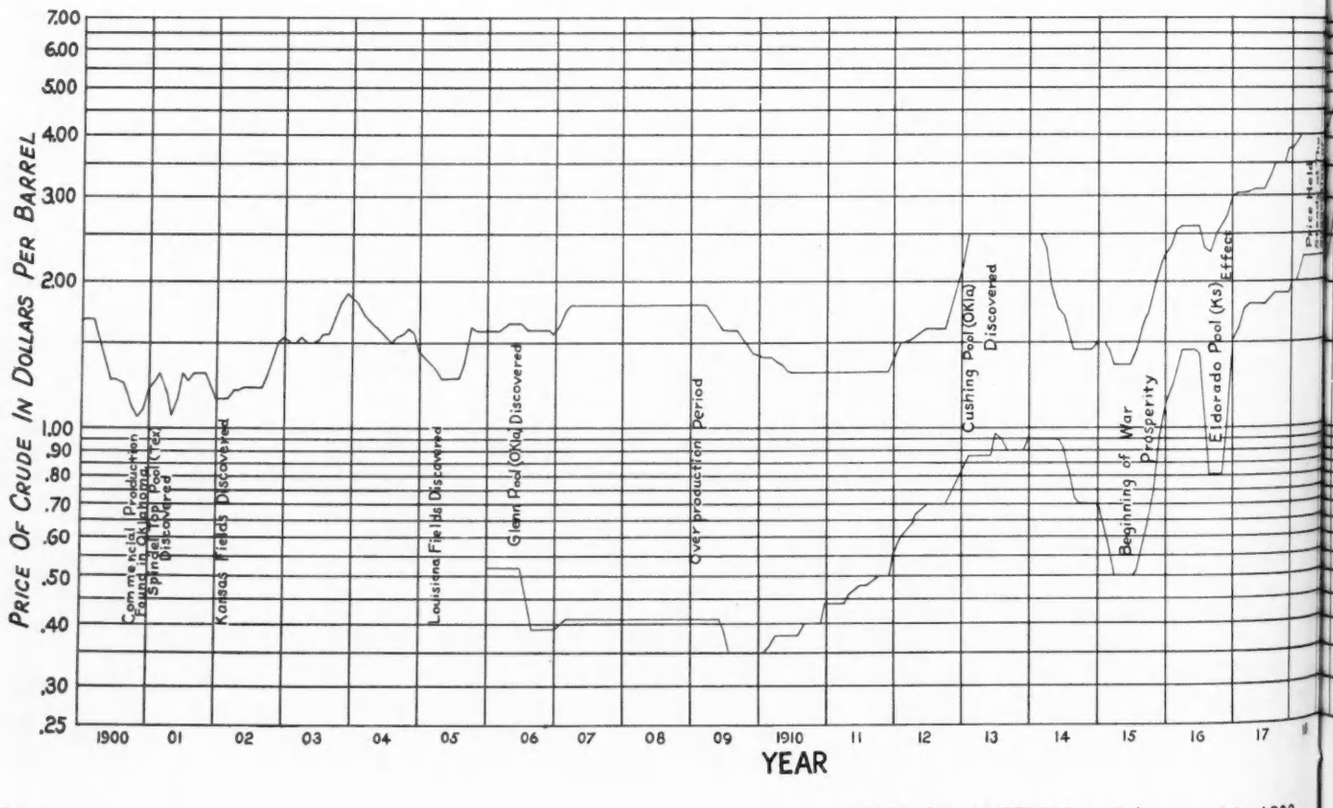
Until 1900, the main demand for petroleum products was for illumination purposes under the form of kerosene, and the turning point in the increased rate of demand for crude takes place at the outset of the present century. A study of crude oil prices from 1900 is thus of particular interest. The birth of the new century is marked by discovery of commercial production in Oklahoma and of the great Spindletop gushers of Texas. The reaction in Pennsylvania crude price is not noticeable. This is true also of the discovery of the Glenn Pool (Oklahoma). Apparently the methods of transportation of crude are insufficiently developed to permit an oversupply in Western markets to react on the Eastern Crude Prices. It is only with the great Cushing overproduction of 1915 that a correlation can be established between Mid-Continent and Appalachian prices. The Cushing pool (Oklahoma) was discovered in the early part of 1912, but did not reach its peak production be-

fore the spring of 1915, when it attained a potential production of 315,000 barrels a day. The crude oil market had barely recovered under the impulse of war prosperity when the Eldorado pool (Kansas) was discovered and endangered the market anew. Prices dropped sharply, but for a short duration only. The demand of motor fuel and lubricants to propel the war machines was too great to allow for a deep recess. Furthermore, the peak of daily production of the Eldorado field proved to be but 115,000 barrels. During World War time, crude prices of both grades kept rocketing; the ascension continued until the end of 1920 which marked the beginning of a sharp decline not only in crude oil prices but for all commodities. The recess in prosperity was generally known as the Post War Depression which was of relatively short duration. It is known now that it was the beginning of a major business cycle which ended with the 1929 slump. A business cycle is characterized by three periods: a depression marked by a rapid drop in commodity prices, a stabilization at a low level, and a prosperity period the end of which is indicated by a new depression. During the post war economic cycle, these periods are not apparent on Figure 1 as crude oil retains an average price level with occasional sharp departures from what may be called an equilibrium plane. The correlation between Pennsylvania Grade crude and Mid-Continent crude prices is rather good until the end of 1926. Both curves are affected to a corresponding degree by the Mexican crude imports in 1922 and the California overproduction of 1923. In the fall of the latter year the Long Beach and Santa Fe Springs pools (California) reached their peak production with respective daily rates of production of 260,000 and 325,000 barrels. During 1924 the California bonanza fields of the Los Angeles Basin as well as some of the prolific Mid-Continent fields were expected to decline substantially. This failed to materialize and the price recovery of the beginning of the year was completely eradicated when the production decline in California was much less than had been anticipated and some of the large Mid-Continent fields maintained or increased their production, particularly Burbank (Oklahoma) and Powell (Texas). Price recovery took place however at the end of 1924, to be broken again in 1925 with the discovery of deep sand production in the Smackover field (Arkansas). The year 1926 was marked by the discovery of the greatest oil district up to that time, Seminole (Oklahoma). It was not a single field but a cluster of prolific pools which by the fall of 1927 gushed out a daily production of over half a million barrels. The price reaction in the Mid-Continent was sharp but the operators of this district soon realized that flooding the market with crude was to their disadvantage and a first attempt at proration under the form of shut-in agreements became successful. The production control methods used were not of a price fixing nature but tended to adjust crude deliveries according to market requirements; prices in the Mid-Continent stabilized themselves to the average level of $1.25 from January 1927 to October 1930.

We note here a very important fact from the point of view of the Appalachian oil operators: the interrelation between Mid-Continent and Pennsylvania Grade crude prices was ruptured. A constant rate of decline in Pennsylvania Grade crude prices was noticed starting with the middle of the year 1929. This coincided with the first inflexion in commodity prices and in business activity. Nothing of the sort was apparent in the Mid-Continent where the first real break in the crude market occurred

FIGURE 1

Comparison of Pennsylvania Grade crude prices with Mid-Continent.



in November, 1930; the great East Texas field had been discovered and its potentialities became known. A potential flush production of over one million barrels per day was at hand ready to flood the market if the mechanism of proration was not able to operate the gates. The mechanism failed. Coupled with the deepening of the general business depression, prices reached levels unheard of since the early days of the petroleum industry: $.25 in the Mid-Continent; $.10 in East Texas. But the Pennsylvania Grade crude price was but little affected if at all, in fact, the average rate of decline of the Bradford crude price stayed the same. More and more the Pennsylvania crude market proved to be independent of the Mid-Continent. The credit crisis of March, 1933, affected both crudes, however, but this was to be expected in virtue of the nature of the slump. With the enforcement of proration in the Mid-Continent producing states and the liquidation of the hot-oil problem in East Texas, Mid-Continent crude enjoyed a period of stable prices for over two years, in 1934 and 1935. Nothing of the sort happened in Pennsylvania. The two price structures were definitely divorced. An element of stiffness was introduced in the Mid-Continent price structure by efficient state regulations whereas the Pennsylvania Grade crude retained its flexibility characteristic to a freely competitive market.

The Elements of Price

Prices in a competitive industry are a function of three main factors: the Supply, the Demand, and the Unit Production Cost. More specifically it is possible to say that price is a direct function of the Demand for the product "D", its unit production cost "C", and a reverse function of the available supply "S". Perhaps it is not too bold to represent the price function by an equation

$$P = f\left(\frac{D,C}{S}\right)$$

where "f" represents a complex mathematical function. This definition of price is particularly applicable to the Pennsylvania Grade crude as it fails purposely to include the available gold stock and its utilization coefficient. These last mentioned factors do not enter the equation as set above because we are considering here the immediate factors of prices although petroleum as a commodity may not escape the influence which the above neglected factors may have on a general price index.

There is another element of the price equation which we have failed to consider because it is hard to evaluate. It has to do with resistance to change, or stiffness of the market. In fact, it takes a persistent oversupply, definitely in excess of the demand, in order to ultimately lower the price of a freely produced and freely offered commodity. To put it concretely it seems possible to state definitely for the Pennsylvania Grade crude that an average production in excess of 5 percent over the average demand for over a period of three months becomes extremely dangerous for the steadiness of the market.

Production cost comes into the price equation in the following manner. In the long run, the average crude prices per barrel must exceed the average producing cost for the same unit. If it were not so and if prices were below average cost, marginal producers would cease to operate their leases thereby reducing the supply. Of course, the low cost producer may increase his production to make up for the reduced supply and really could increase it indefinitely until oversupply would again force the prices down and ultimately below his own low producing cost. Then he would abandon production and a definite undersupply would bring the prices to higher levels.

The price equation is not a unidirectional relation but it is rever-

FIGURE 1
(Continued)

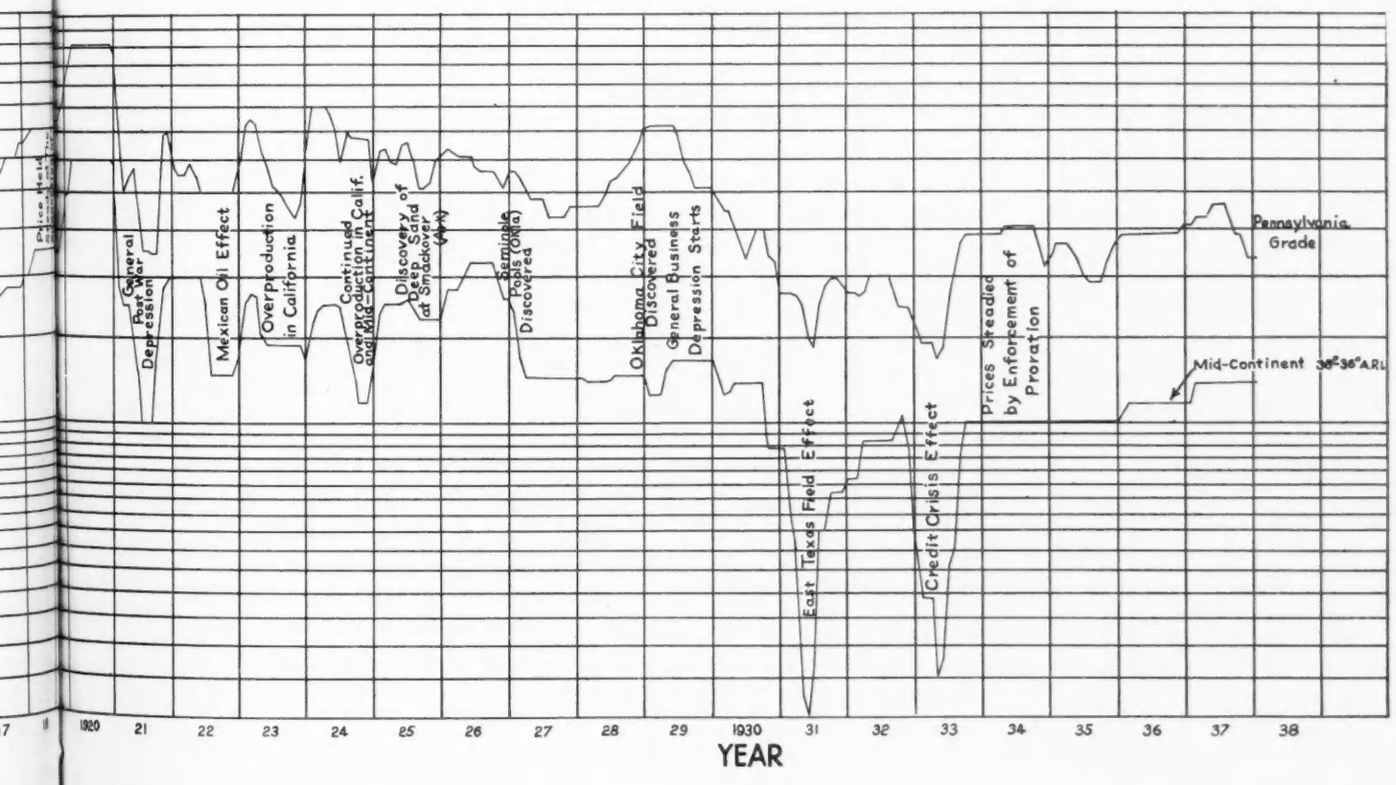

General Post War Depression
Mexican Oil Effect
Overproduction in California
Continued Overproduction in Calif. and Mid-Continent
Discovery of Deep Sand at Smackover (Ark.)
Seminole Pools (Okla.) Discovered
Oklahoma City Field Discovered
General Business Depression Starts
East Texas Field Effect
Credit Crisis Effect
Prices Steadied by Enforcement of Proration
Pennsylvania Grade
Mid-Continent 36°-36° A.R.L.
1920 21 22 23 24 25 26 27 28 29 1930 31 32 33 34 35 36 37 38
YEAR

TABLE 1

Output of Lubricants—August, 1937

Source: U.S.B.M. Monthly Petroleum Statements

	CRUDE RUN		LUBRICANTS		Percent of Total U. S. Lubricants
	In 1,000 Barrels	In Percent of Total U. S.	In 1,000 Barrels	In Percent of Crude Run	
East Coast	17,589	16.7	739	4.21	25.5
Appalachian	3,356	3.2	481	14.30	16.5
Indiana, Illinois and Kentucky	14,131	13.4	284	2.05	9.8
Oklahoma, Kansas	11,176	10.6	300	2.68	10.4
Texas (Inland)	6,839	6.5	24	.35	.8
Texas (Gulf)	25,172	23.9	700	2.78	24.1
Louisiana (Gulf)	4,333	4.1	116	2.68	4.0
Arkansas and Louisiana (Inland)	2,090	2.0	40	1.91	1.4
Rocky Mountains	2,413	2.3	12	.50	.4
California	18,152	17.3	204	1.12	7.1
Total	105,251	100.0	2,900	2.75	100.0

sible, so to speak, as a chemical relation; the price in turn reacts on the demand as well as on the supply. If the cut in price is too drastic following a period of economic maladjustment, production will go down and low prices will tend to increase the demand. In other words the price relation is of the nature of an equilibrium equation, equilibrium obtained by the free play of competitive bidding between the different purchasing agencies. In the case of oil, the bidding is made by pipe line companies under the form of posted prices.

Prices of commodities in general are submitted to various kinds of fluctuation: the secular variations, the business cycle and the aperiodic variations. The secular variations are long term changes, periodical in nature and of a duration of recurrence of the order of 50 years. A downward trend of this nature seems to have started in 1920 and is likely to continue until about 1945. In order to be rendered evident it is necessary to examine the price figures on the gold basis, taking into account the devaluation of the dollar in terms of gold. After 1945, an upward swing in general commodity price may be expected. The duration period of the price variations created by general business cycles is shorter; from 8 to 10 years usually elapse from the inception of one business depression to another. The most recent dates marking the major business cycles are 1920 and 1929. It appears too early at this time to affirm if we are entering another major recession in view of the general industrial slump since the summer months of the year 1937. In the present study, we are mostly concerned with the aperiodic price variations of crude oil as related to the immediate supply, demand and production cost and its effects on the Pennsylvania Grade Crude oil prices.

It may be well to recall here the main reasons for the permanent premium paid for Pennsylvania Grade Crude oils:

1. Pennsylvania crude, being a strictly paraffin base oil, requires less processing operations in order to secure lubricating stocks of high quality, the so-called Cylinder Stocks and Bright Stocks, which are obtained as residuum of fractionation. These lubricating cuts are particularly resistant to heat and consequently suitable for steam engine and turbine lubrication especially when superheated steam is used. These cuts are further used as blending stocks for compounding motor oils of the desired viscosity. Since these lubricating stocks are obtained as bottom in the fractionating towers they require relatively little heat for their obtainment, whereas lubricants of equal viscosity range made from asphaltic Gulf Coast or Mid-Continent oils are obtained as a product of vacuum distillation requiring greater power expenses. This is perhaps the main reason for the higher average market price of Pennsylvania grade crude.

2. With the viscous and non-viscous neutral cuts added to the residuum lubricating stocks the total fraction of lubricants obtained from Pennsylvania oils amounts to about 23 percent on the average. This fraction constitutes an important part (29.1 percent in 1929) of the value at refineries of products derived from Pennsylvania grade crude, consequently the market price of the different lubricating stocks affects to a large degree the price which the crude commands at the pipe lines.

3. The source of supply of Pennsylvania crude is located in the center of refineries equipped for total processing. The pipe line charges for delivery at refineries are small compared to the charges made for crude delivery from the Mid-Continent region. The Appalachian refineries were the first to be in a position to supply a rapidly growing demand in high grade lubricants and, to this date, they have retained their privileged situation mainly due to the unusual occurrence of events here enumerated.

4. Pennsylvania crudes are relatively free from sulfur and chemi-

TABLE 2

Receipt of Crudes at Appalachian Refineries, August, 1937, in 1000 bbls.

From U.S.B.M. Reports by Refineries

	Intrastate	Oklahoma	Texas	Others	Total
East Ohio	147	591	.....	226	964
Pennsylvania (Western)	1,289	82	58	60	1,497
West Virginia	139	75	.....	15	229
Western New York	340	254	.....	92	686
Total	1,915	1,002	58	401	3,376

cal treatment of refined products is reduced to a minimum.

5. The publicity campaign for Pennsylvania lubricants carried on in particular by the Pennsylvania Grade Crude Oil Association has rendered the motorists and industrial consumers lubricant conscious. This campaign based on results of performance of Pennsylvania Grade motor oils has done a great deal to bring this grade of lubricants on the market from coast to coast and abroad.

However, with the advent of modern methods of refining Western crudes (mixed base and asphaltic base) by means of solvent extraction and hydrogenation, it is possible to create oils which compare favorably with Pennsylvania Grade motor oils; thus the monopoly which the latter have enjoyed thus far appears threatened.

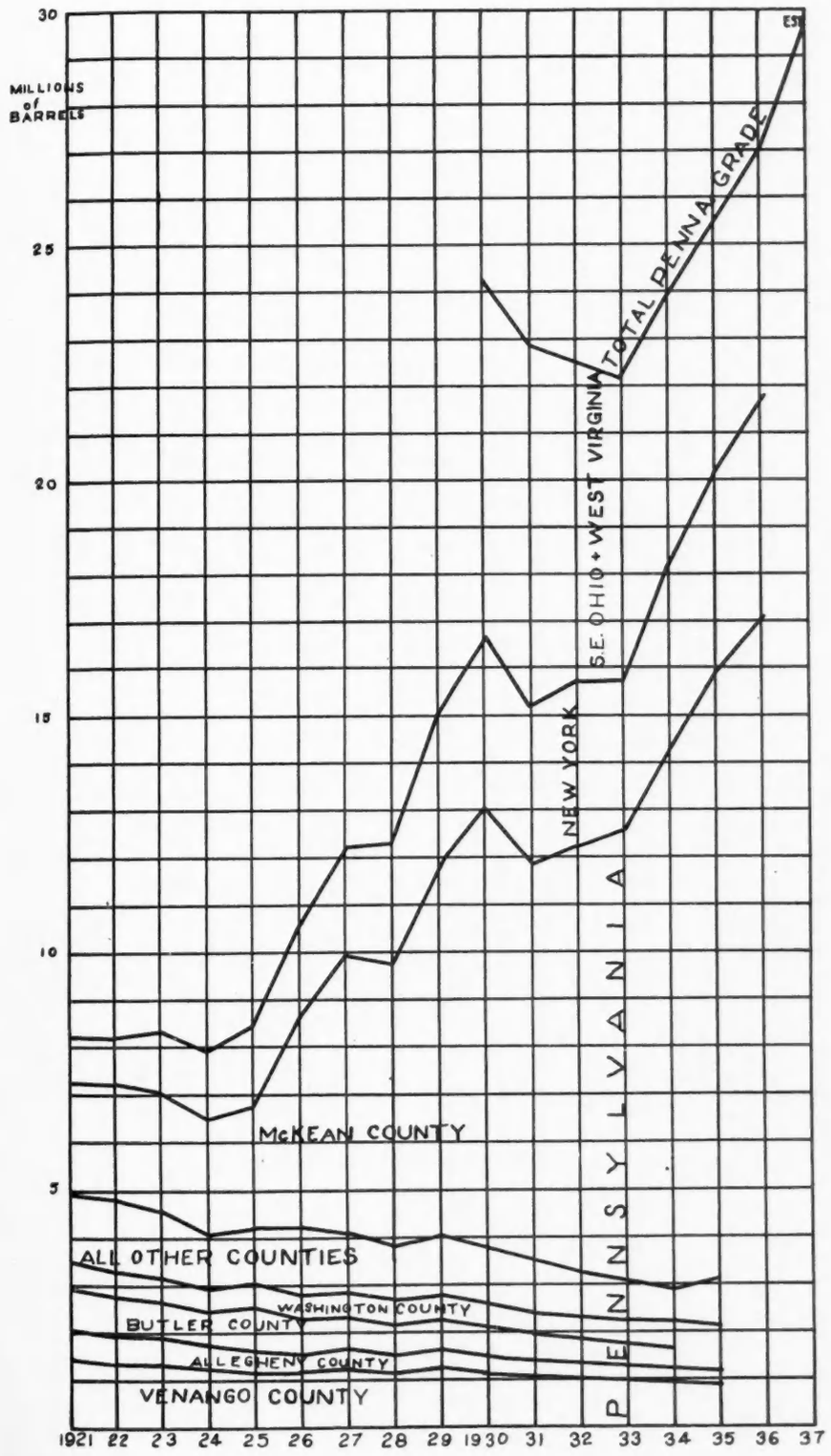


FIGURE 2
Yearly production of Pennsylvania Grade crude.

Pennsylvania Grade Crude Market

Due to the desirable properties of Pennsylvania Grade motor oils a large portion of the lubricant requirement of the nation is made in the Appalachian region. It is not possible to segregate from current lubricant statistics the portion derived from Pennsylvania Grade crude but the figures can be estimated with an acceptable degree of accuracy. In Table 1 are given the figures relative to the production of lubricants in the United States for the month of August 1937.

It is worth noticing that the Appalachian region which refines only 3.2 percent of the total runs to stills in the United States manufactures 16.5 percent of the lubricants. To be sure all lubricants made in the Appalachian region are not made from Pennsylvania Grade as 1,060,000 barrels of Westtern crude, mainly from Texas and Oklahoma, were refined in the region during the month of August 1937. During the same month, refineries on the East Coast received 351,000 barrels of Pennsylvania Grade, which presumably were processed for lubricants. It is not possible to estimate the proportion of lubricants manufactured from Western crudes in the Appalachian region, although one may suppose that it is mostly processed for gasoline and fuel oil. In view of the higher yield in lube from Pennsylvania Grade crude processed on the East Coast it compensates for the Western crude which may be processed for lubricants in the Appalachian region, and the percentage of total U. S. lubricants made from Pennsylvania Grade remains presumably around 16.5 percent. Statistics reported by the U. S. Bureau of Mines on lubricants include all grades of oil comprising spindle oils, journal oils, etc. As very little of these oils are made from Pennsylvania Grade crude the contribution of the latter toward the supply of the Nation's motor oils may be as high as 25 percent.

Table 2 gives the summary of receipts at Appalachian refineries

TABLE 3
Pennsylvania Grade Crude Oil Carriers and Posted Prices as of December 15, 1937

Company	Region	Prices
South Penn Oil Co. Lines	Allegany and Bradford	$2.20
Southwest Pennsylvania Lines	Southwest Pennsylvania	1.88
Eureka Lines	West Virginia and Southeast Ohio	1.82
Buckeye Lines	Southeast Ohio	1.70
Tide Water Oil Lines	Allegany-Bradford	2.20
Pennzoil Co. Lines	Oil City-Titusville	2.15 to 2.10
Buckeye Lines	Southeast Ohio (Corning Grade)	1.27

on which the foregoing conclusions are based.

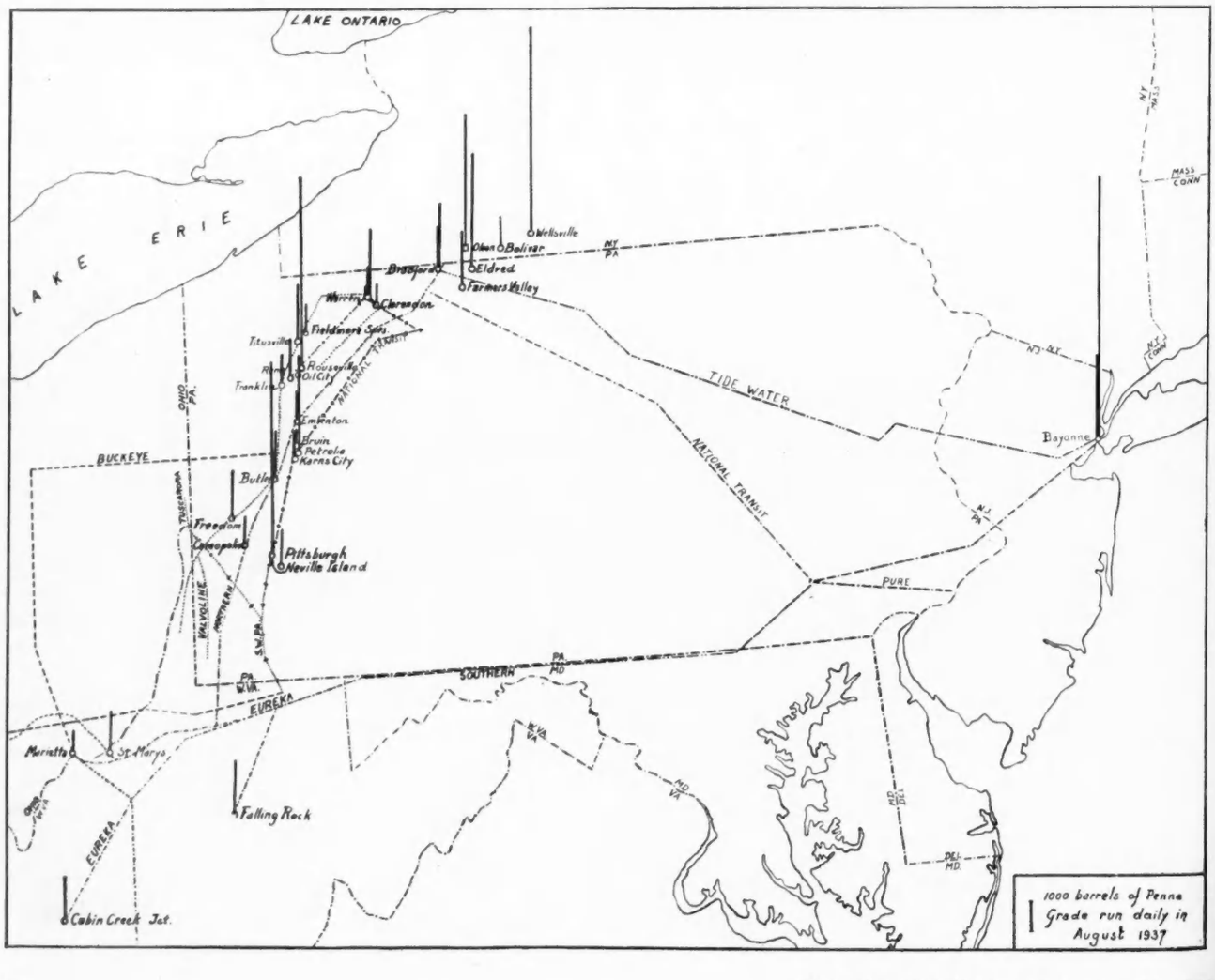
The main producing states of Pennsylvania Grade crude are those of Pennsylvania and New York as may be inferred from the following considerations. All Pennsylvania and New York's production is classified as Pennsylvania Grade, for which states the production figures in the year 1936 are respectively 17,080,000 and 4,663,000 barrels as against a total production of 27,224,000 barrels of Pennsylvania Grade for the same year.

A picture of the development in production of Pennsylvania Grade crude for the last 15 years may be obtained from Figure 2, which represents for the State of Pennsylvania the production of crude from the main producing counties and from the State of New York. The following features are immediately apparent: The most striking is the leadership which McKean County (Bradford field area) has not only retained but developed to a high degree of prominence in recent years due to the rapid extension of water-flooding operations particularly since 1926. Due to similar development in the Allegany and Bolivar fields in New York State production has been increasing there at a corresponding rate. The other counties in the state of Pennsylvania are on a steady decline; even Venango County (Oil City-Titusville area), where air repressuring and air drives are applied on an increasingly large scale, has all but failed to maintain a steady production. Consequently the bulk of the trading in Pennsylvania Grade is carried in the Bradford, Pa., Olean and Bolivar, N. Y., areas, whereas a smaller amount comes from other counties of Pennsylvania, the northern section of West Virginia and southeastern Ohio.

For the major part, the crude is rendered at refineries through pipe line channels, which perform also as purchasing agency or intermediary between the producers and the refiners, although, in a few cases, refineries themselves operate their own pipe lines. Table 3 presents a list of the main Pennsylvania Grade oil carriers in the Appalachian District together with their posted prices as of December 15, 1937.

The market location for Pennsylvania Grade crude is more apparent in Figure 3, where the main

FIGURE 3
Movement of Pennsylvania Grade crude



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trunk lines carrying this crude are represented together with the location of the refineries running it. The majority of the plants at the location indicated run exclusively Pennsylvania Grade crude particularly as far as the Appalachian District is concerned. As the individual figures for crude run by refineries are kept confidential by statistical organizations collecting such data a picture of the movement of Pennsylvania Grade crude could only be arrived at by means of mathematical treatment and in making the assumption that at any given time the daily crude runs to still are proportional to the individual refinery capacity in a constant rate. The figures arrived at in the fourth column of Table 4 are obtained on this assumption.

The Trends in the Lubricant Market

In 1927 the domestic gasoline demand was 296,807,000 barrels and 21,669,000 barrels for lubricants, indicating a ratio of 13.65 percent in the consumption of gasoline. In 1936 the motor fuel demand was 481,591,000 barrels in the United States, whereas the domestic consumption of lubricants was 22,676,000 barrels or 4.72 percent of the total gasoline demand. It must be remembered that lubricants are used for other purposes than motor oil but a comparison of the above figures indicates a strongly declining lubricant market with respect to gasoline. Taken by itself the lubricant market for motor vehicles appears rather stationary, whereas the consumption of lubricants by the industries shows a marked relation to the general industrial activity.

Since the lubricant fraction constitutes in the Appalachian region an important part of the returns of the refinery processing per barrel of crude it is no wonder that the Pennsylvania Grade price structure is more at the mercy of the general business activity and therefore one of the reasons for the last price cuts may be explained by the serious decrease in business activity since the summer months.

From Table 5 it appears clearly that the lubricant market failed to keep pace with the demand of gasoline and that the lube market will in the future be either rather stationary or on a general decline. On the downward slope of the lubricant market will be superimposed the fluctuations of the industrial activity.

The causes for this general declining lubricant market are numerous, and a few of the main ones will be enumerated:

1. There is at this time a general tendency toward rational lubrication. The problem of reducing friction in engines has become better known within the past few years; this tends towards smaller quantities of lube to perform an equivalent function.

2. Motor cars are better built with better seal of the piston rings, which has a tendency to reduce oil consumption occurring through burning and escape at the exhaust pipe. Reduction of the "blow-by" of the gases of combustion and of formation of sludges lengthens the time between drainage of motor oil.

3. Oils of better quality and better suitability for the particular lubrication service required are put on the market. This again increases the tendency of the consuming public to drain crankcases less frequently. The generalized use of oil purifiers and filters on motor cars has a similar effect.

4. The growth of the number of oil reclaiming plants, especially among large industrial consumers, has for effect to reduce the use of lubricants by the industry.

Trend of Pennsylvania Grade Crude Prices

Outside of the already mentioned influence of the general industrial activity on the price of Pennsylvania grade crude there seem to be several factors which are susceptible in influencing its price to a large degree.

1. One of the best indications of the future price of a commodity is the comparison of its rates of production and demand. This comparison has been made in Figure 4

TABLE 5
Relationship Between the Gasoline and Lubricant Markets
Data from U.S.B.M. Mineral Year Book 1937

YEARS	DOMESTIC DEMAND OF LUBRICANTS			Motor Vehicle Demand of Motor Fuel	Ratio Lubricant Gasoline in Motor Vehicles (Percent)
	By Motor Vehicle	By Industries	Total		
1929	13,429	10,180	23,609	334,649	4.01
1930	13,614	7,975	21,589	351,372	3.87
1931	13,447	6,621	20,068	359.042	3.75
1932	12,061	4,553	16,614	337,771	3.62
1933	11,781	5,371	17,152	335,533	3.51
1934	12,337	6,087	18,424	365,200	3.38
1935	12,722	6,939	19,661	386,981	3.29
1936	14,760	8,916	22,676	428,600	3.21

TABLE 4
Refineries Running Pennsylvania Grade Crude
Estimated Runs to Still for the Month of August 1937

State	Refinery Name	Location	Capacity in Bbls./Day	Estimated Run of Pennsylvania Grade Crude in Aug., 1937
Pennsylvania	Bradford Oil Refining Co	Bradford	2,300	1,445
	Bradford-Penn Refining Co	Clarendon	1,000	629
	The Canfield Oil Co	Coraopolis	1,500	945
	The Continental Refining Co	Oil City	1,000	629
	Cities Service Oil Co	Titusville	3,000	1,885
	Daugherty Refinery	Petrolia	4,000	2,518
	Franklin Creek Refining Corp	Franklin	1,500	945
	The Freedom Oil Works Co	Freedom	2,500	1,570
	Gulf Oil Corp. of Pennsylvania	Neville Island	10,000	6,290
	Kendall Refining Co	Bradford	3,500	2,200
	Oil Creek Refining Co	Fieldmore Springs	1,500	945
	Pennsylvania Oil Products Refining Co	Eldred	6,000	3,780
	Pennsylvania Refining Co	Karns City	1,500	945
	The Pennzoil Co	Rouseville	10,000	6,290
	Quaker State Oil Refining Corp	Emlenton	1,650	1,068
	Quaker State Oil Refining Corp	Farmers Valley	3,000	1,885
	Sloan and Zook Refining Co	Warren	1,500	945
	Superior Oil Works	Warren	500	314
	Ultra Penn Refining Co	Bruin	800	504
	United Refining Co	Warren	3,500	2,200
	Valvoline Oil Co	E. Butler	2,500	1,570
	Waverly Oil Works Co	Pittsburgh	1,800	1,130
	Wolverine Empire Refining Co., Inc	Reno	2,000	1,258
New York	Allegany Refiners, Inc	Bolivar	1,500	1,010
	Sinclair Refining Co	Wellsville	10,000	6,750
	Socony-Vacuum Oil Co., Inc	Olean	6,500	4,380
New Jersey	Standard Oil Co. of New Jersey	Bayonne	155,000	8,550
	Tide Water Oil Co	Bayonne	50,000	2,750
West Virginia	Elk Refining Co	Falling Rock	2,500	1,750
	Ohio Valley Refining Co	St. Marys	2,000	1,400
	The Pure Oil Co	Cabin Creek Jct.	2,000	1,400
Ohio	The National Refining Co	Marietta	700	700

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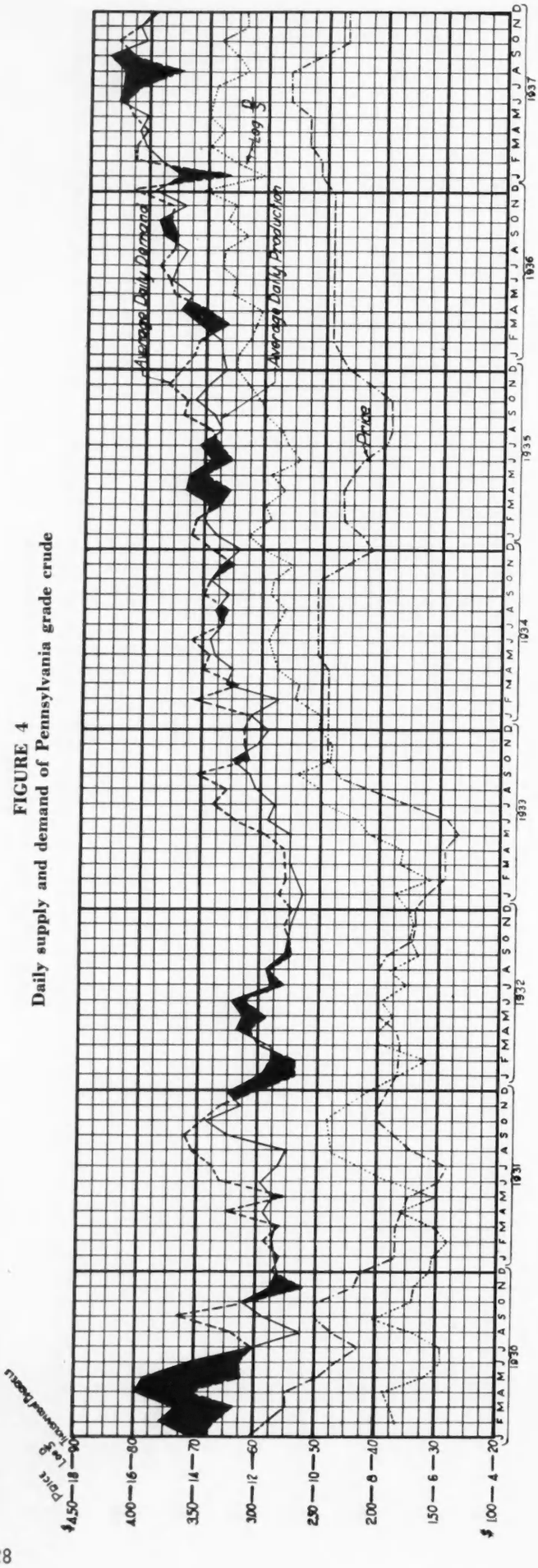
Average Daily Demand
Log S/D
Average Daily Production
Price
Price & Logarithmic Ratio
$4.50—18—80
4.00—16—80
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1930
1931
1932
1933
1934
1935
1936
1937

FIGURE 4
Daily supply and demand of Pennsylvania grade crude

for the Pennsylvania grade crude where the average daily demand and production are plotted by months beginning with the year 1930. Whenever the curve of production rises above the demand, a period of overproduction is inaugurated. The excess supply may be measured by the shaded area; these periods should normally coincide with declining prices, whereas the area of underproduction should indicate rising prices. However, the price relations are not quite so simple. Furthermore, it would be desirable to find an index of price sufficiently sensible that the price trend would be revealed several months in advance. To this effect it is necessary to consider that the available supply is made of stocks at the beginning of each month plus the current monthly production. The stocks of crude are further made of the stocks at refineries, in pipe lines and tank cars. These figures are given each month by the Monthly Petroleum Statements of the U. S. Bureau of Mines; they have been compiled for the current supply and demand of Pennsylvania grade crude for the years 1930-1937 inclusive. A sensitive price index already propounded by Arthur Knapp (1923 issue of the Petroleum Year Book of the A. I. M. E.) has been calculated from the figures so obtained. The index consists in figuring the logarithm of the current demand over the current supply $\left(\text{Log}\frac{S}{D}\right)$; it has been plotted using an arbitrary scale on Figure 4. It will be noticed that the index represents the crude oil price curve with a great degree of correlation, and furthermore that this index starts showing variations some two to four months ahead of the actual price movements. This is particularly true at the following dates:

Index Changes	Price Movements
September 1930	November 1930
May 1931	July 1931
February 1932	April 1932
February 1933	May 1933
November 1934	December 1934
January 1935	April 1935
June 1935	October 1935
May 1937	September 1937

Common with all economic indices trying to forecast future trends, the present one has its shortcomings. In a few instances changes are concomitant (July, 1930), or in the reverse order (December, 1936, and January, 1937), or a price movement is hardly indicated by the logarithmic index (October, 1934), or a large change in the price index is hardly reflected in the price variation (October, 1931). Some of the anomalies may be explained on the ground that the statistical position of the market did not warrant a price change. In the case of October, 1931, the demand, for a period of six months, ran far above the current daily rate of production. One will recall at that time the existence of proration agreement among the Pennsylvania grade producers.

In general it is possible to affirm that a decrease in the value of the logarithmic index coupled with an

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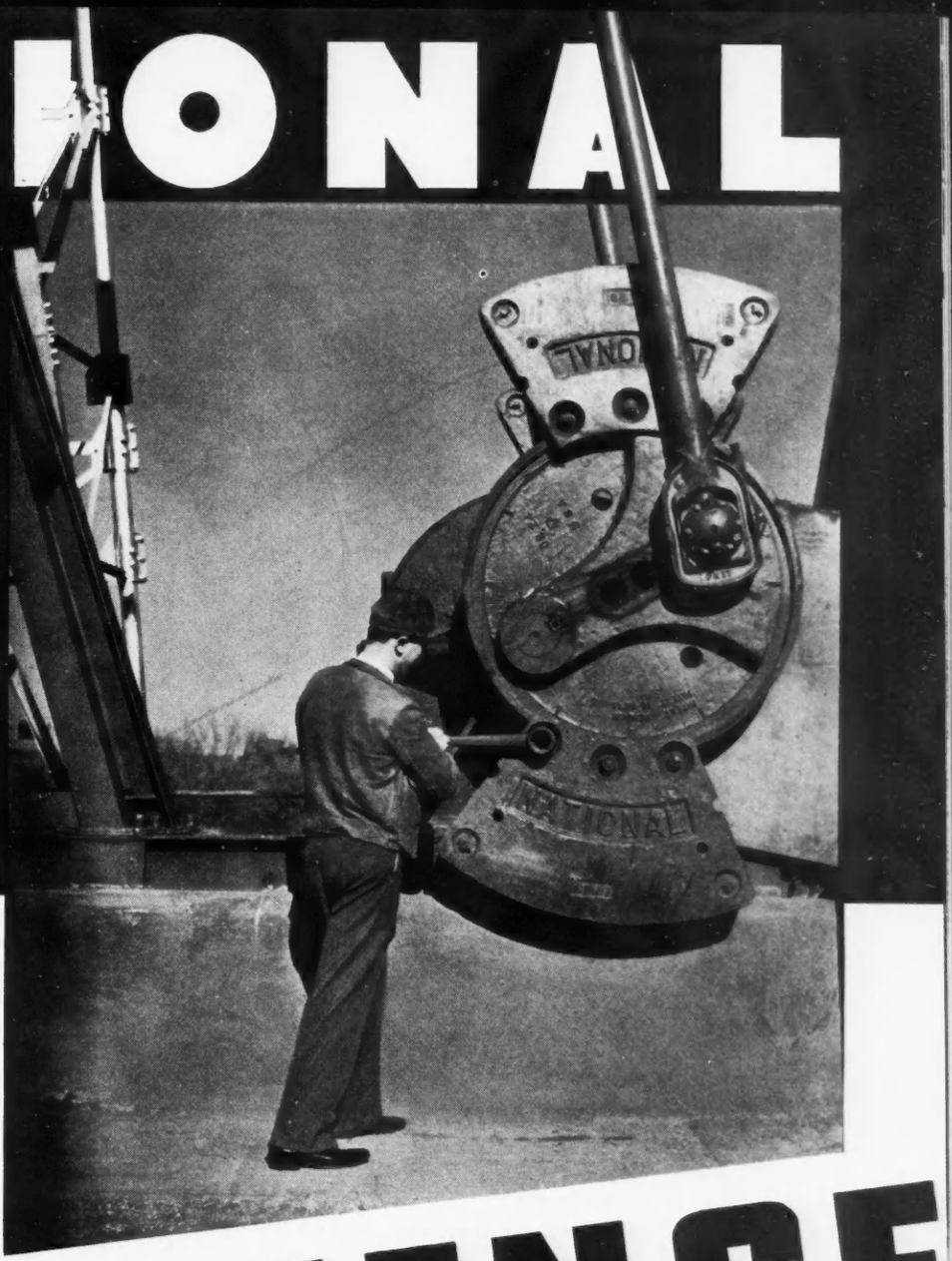

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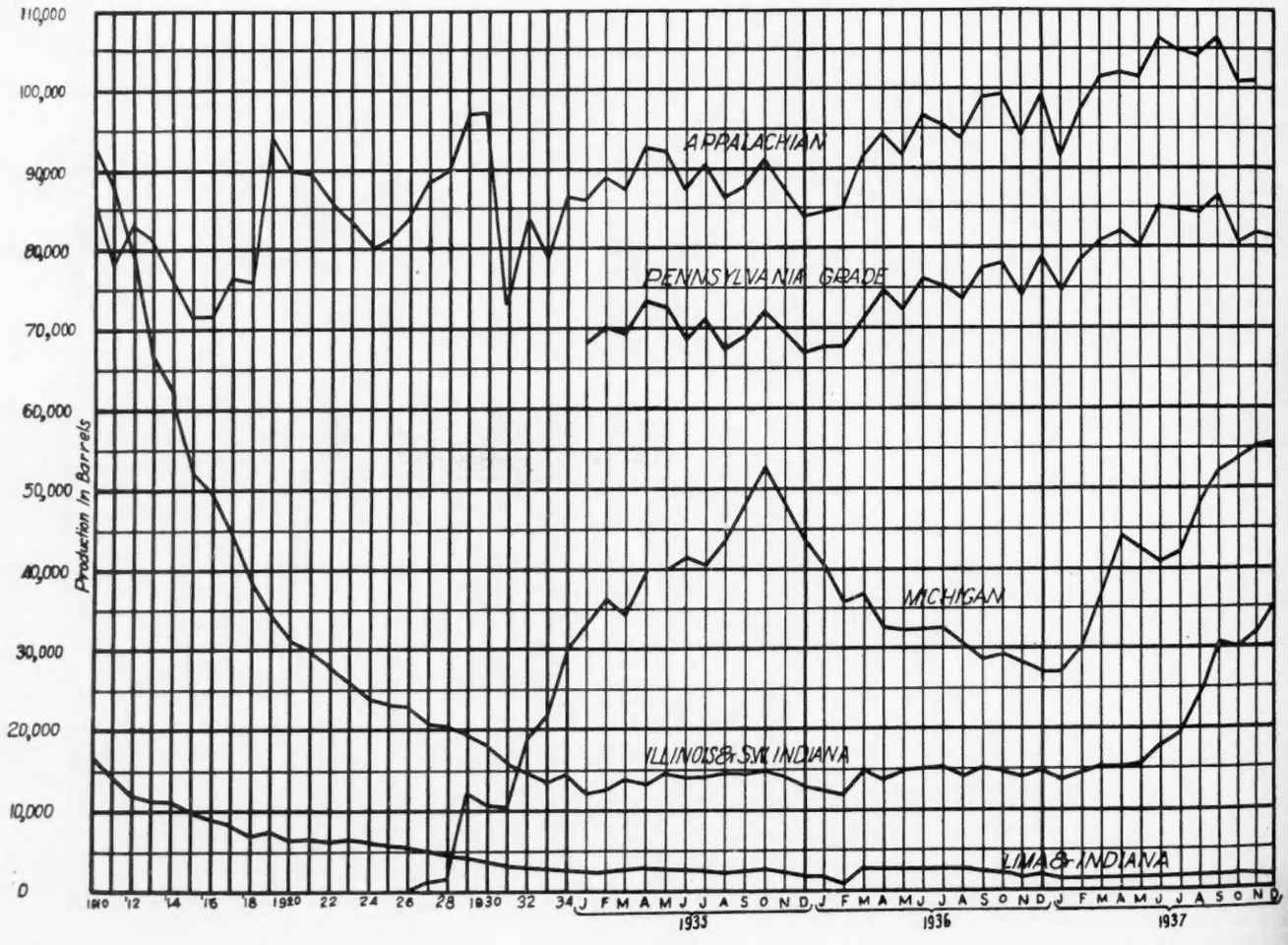
incipient overproduction will bring about a reduction of market quotations. Reverse conditions will bring about an increase in price.

In Figure 4, the last available accurate production and demand figures are the ones for the month of November, 1937. The December, 1937, figures have been calculated from the statistical data issued by the A. P. I. and for the month of January, 1938, the figures have been estimated according to the trend shown for the two first weeks of the month. Consequently the data for these last two months will stand revision when definite figures are available.

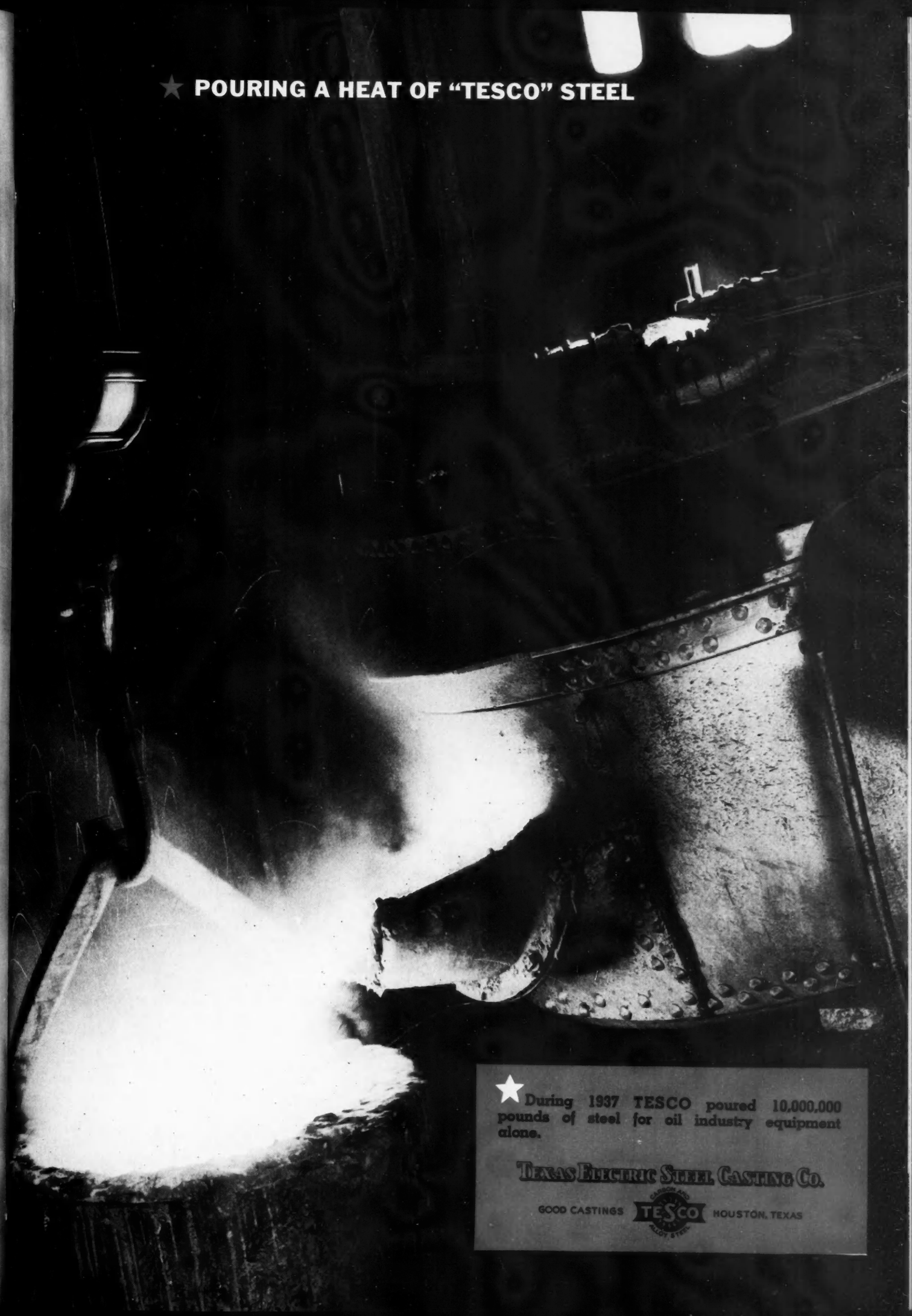
The data show for 1937 a definite oversupply starting with the month of June. This period is further marked by a definite downward trend in the logarithmic index; it is no wonder that a sustained similar trend in the crude prices has been noticed through the months of September, October, November and December. At this writing, the statistical position of the Pennsylvania Grade crude is considerably improved as it appears on Figure 4 but it does not seem that better prices are at hand for the near future.

2. Overproduction outside of the Pennsylvania Grade region is also a threat to the price structure here considered, provided that this production is within a sufficiently short distance from the Appalachian refineries. The overproduction may be actual or potential. For the past year, discoveries of new flush fields in Michigan and Illinois have been considered as endangering the Appalachian crude market. Perhaps too much stress has been laid on this point. It seems that although Illinois has been increasing its production rate by 100 percent in the past few months, it constitutes hardly a menace to the Appalachian crude oil. In fact Illinois has a very large refinery capacity consuming at this time mostly Mid-Continent crude and if a threat of overproduction really exists there it will affect mostly Mid-Continent crude. (This danger is so much more serious at this time because the potential new reserves of the Illinois Basin appear to be large and no production control scheme, such as proration, exists in the State).

FIGURE 5
Daily production rate



The situation in Michigan, in the author's opinion, is more of a menace to the Pennsylvania Grade crude price than the one in Illinois. Production which started in Michigan in 1925 has been increasing in an erratic manner reaching a peak daily production of 53,000 barrels in October, 1935, with the development of the Crystal Field. The production of this pool declined very rapidly (Figure 5) until January, 1937, when the development of the Buckeye field began to be felt. Production in Michigan has again reached a new high at this writing with a daily average of 54,000 barrels. In view of the fact that there are no strict regulations in force for limiting production and that the refinery capacity in the state is established at about 46,000 barrels a day there is a situation which might become threatening should further new flush production be discovered. Michigan crude oil and gasoline and fuel oil derived from Pennsylvania crude come in direct competition on the Ohio refinery market. As these products form a large proportion of the returns from refinery processing the availability of cheap crude in the region may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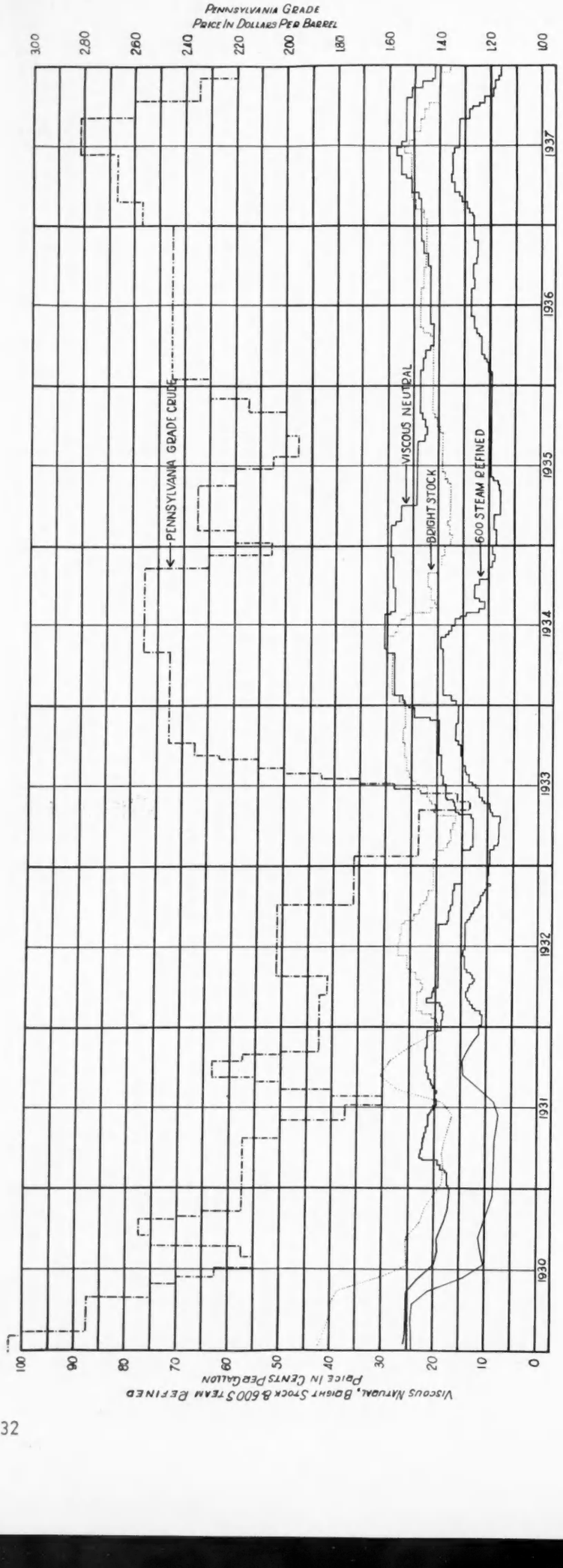

FIGURE 6
Refinery tank car market Pennsylvania lubricating stocks

bear down on the price structure. Furthermore there exists a good correlation between the constitution of crude stocks in the Lima-NE Indiana-Michigan region and the Pennsylvania Grade crude prices.

3. Another factor which may have considerable effect on the Pennsylvania Grade crude oil price is the expected potential production of the proposed new flush development in the Bradford region. Although it is fairly well established that the so-called Sliverville sand, in which three gushers have already been completed is of the nature of a narrow lens; these wells, coming in at a moment when production was already running ahead of the demand and when the stocks were being increased, could but have a disorganizing influence on prices. One must remember that the existence of a potential flush production in the immediate future is just as influential on price as actual overproduction or the existence of a large storage supply To this date the discoverers of those new gushers have kept them shut-in but two new wells are now in the process of drilling with the Sliverville sand as the objective; such development of potential reserves concomitant with an already depressed market can but constitute an impediment to recovery of prices in the immediate future particularly in view of the fact that no state regulation of any kind may force these wells to remain shut-in. One fact in favor of reducing the importance of this factor is that the control of the new sand is in the hands of a few operators who have understood the importance of supply limitation. Nevertheless the whole situation rests on a gentleman's agreement which may be suspended at any moment.

4. In studying the cause of crude price variations one must not forget that the market quotations of the derived refined products influence the crude price to a certain degree. This is particularly true of Pennsylvania Grade as the lubricating fractions return a larger proportion of the total value of the various products derived from one barrel of crude than for any other crude. In order to realize this more fully one need only to consider that at the present market price of $2.20 per barrel of crude it is paying 5.25c per gallon whereas the tank car price of gasoline (U. S. Motor 58-60) in the Appalachian region is on the average 4.8c per gallon, for kerosene 5.75c and for fuel-oil

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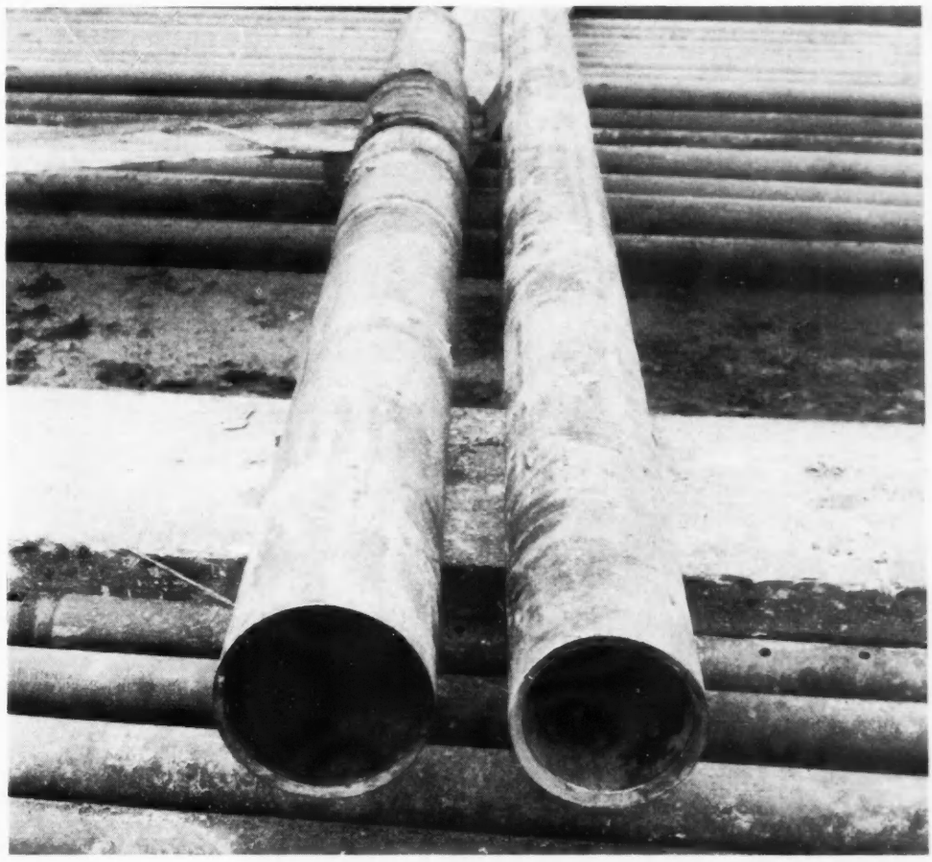
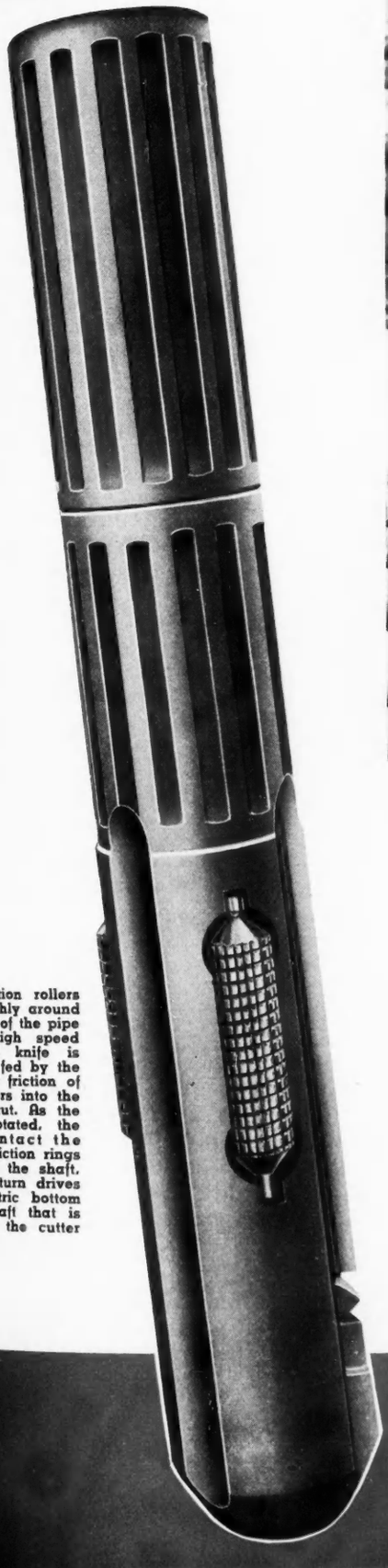


A smooth cut on the end of a piece of recovered pipe may not add to salvage values, but it proves the value of dependable cutting tool performance where the difference in success and failure means real money . . . gained or lost!

The Abercrombie Inside Cutter (shown at left) recently made a 5" liner cut at 3,350 feet on the Clemville, Texas, workover job pictured here; and recovered 300 feet, including the liner packer. The cut made by Abercrombie Red Ball Service is reproduced above, alongside the lathe-cut end of the packer. You can see for yourself the results obtained by the Abercrombie Inside Cutter and the Red Ball Service Operator.

NOTE, at left, how the Abercrombie Inside Cutting Tool operates.



Three friction rollers ride smoothly around the inside of the pipe as the high speed tool steel knife is gradually fed by the continuous friction of these rollers into the point of cut. As the tool is rotated, the rollers contact the beveled friction rings splined to the shaft, which in turn drives the eccentric bottom of the shaft that is pinned to the cutter blade.

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5c. Thus the majority of the refined product must be considered as by-products of the processing for the express purpose of deriving lubricating fractions. These constitute but 23 percent by volume of the total crude and must pay for the loss incurred by the unavoidable manufacture of lighter products. Consequently one must look toward the lubricating fractions market as having a large influence on the crude market. Contrary to other commodities, in the petroleum market, crude quotations follow the movement of finished product prices with a certain delay, whereas normally changes in the raw material prices result at a later date in variation of the same tendency in the derived finished products. This rule holds for Pennsylvania Grade as well. One can in fact notice a close correlation, in Figure 6, between the Refinery Tank Car Market of Pennsylvania Lubricating Stocks and the crude oil quotations. A delay of a duration of one to two months is noticeable.

To sum up, it appears that price changes in the Pennsylvania Grade crude market are not unduly complicated to forecast. An analysis of the supply-demand relation taking into account the potential as well as the storage sources of supply coupled with a study of the tendencies in representative lubricating oil stocks will permit the producer to find out for himself if the planned extension of his producing operations is economically wise. This perhaps would solve the problem of stabilizing the Pennsylvania Grade crude market but would require a degree of economic foresight and determination to put into action the results of logical deduction which it is not possible to expect from a large number of small independent producers. Fortunately they are grouped into associations which could hand them advice as to the outlook for their business, but these can act only in an advisory capacity. It has been the experience of the oil business that effective stabilization may only be obtained by a complicated system of effective as well as flexible regulations. This takes us to the thorny question of proration in the Appalachian Fields.

Is Proration Possible in Appalachian Region?

During the years 1930-1931 an attempt at a mitigated form of proration was made and apparently was successful in balancing supply and demand of Pennsylvania Grade crude. At that time, the bulk of the production was already coming from the Bradford-Allegany fields and the prominence of the production in that region may be obtained by a consideration of figure 2. The key to the economic adjustment of the Appalachian crude market is again in the water-flooded territory as the remaining producing wells could be classified as stripper wells. The total production from the Bradford, (Pa.), area and New York State combined, figures out to be 17,049,000 barrels in 1935 as against a total Pennsylvania Grade production of 25,752,000 barrels for the same year leaving thus 8,693,000 barrels for the combined production of the remaining portion of the states of Pennsylvania, West Virginia and Southeastern Ohio. The question of proration in water-flooded fields offers some unusual problems, not encountered in flush and pumping fields due to the peculiar behavior of oil sands under artificial water drive. These were observed during the curtailment of p r o d u c t i o n which occurred in the years 1930-31 and Paul D. Torrey in his article on "The Water Flooding of Oil Sands" (Petroleum Engineering Handbook, 2nd edition) has recommended methods of operation under proration schedules which will be summarized here.

The main difficulty in the curtailment of water flooded properties come from the fact that operating expenses remain practically constant under reduced output since water pumping stations require essentially the same power, supervision, and quantity of water for, once pressure is established at the water injection wells, it is not possible to reduce the intake pressure without seriously injuring the ultimate recovery from the water flooding pattern. "For floods which are approaching their economic limits a combination of back-pressuring and pumping" is recommended by Torrey. "All oil in excess of the prorated amount is returned into the hole from the separator tank and as the column of fluid rises in the hole a condition of partial equilibrium between the water intake wells and the producing well is established" . . . . "Before attempting a combination of pumping and back-pressuring the operator should be certain that there are no porous horizons between the bottom of the casing and the top of the producing sand that might absorb oil that has accumulated in the hole." This method of operation has the disadvantage that reductions in pumping operation cost are not obtained and that there is danger of by-passing lenticular accumulations of oil. The next method advocated by Torrey consists in back-pressuring and flowing. This procedure has been applied with a great deal of success in the Allegany field during the proration period and has the particular advantage that no oil pumping expenses are incurred since it is simply necessary to crack a valve in order to produce the allocated quota. The method requires installation of pumps with higher possible pressures and water lines must be more resistant, consequently more expensive. It has the advantage of providing a more uniform water-oil contact and prevention of by-pass of less permeable lenticular oil accumulation. A variation of this method is known as "delayed drilling" of the oil well whereby water is injected until pressure has built up to a point where the oil has accumulated in the center of the flooding pattern, at which time the oil well is drilled-in and produced by either pumping or flowing methods according to how high the final injection pressure has been built up.

The technical side of proration in the Appalachian field and particularly in the water flooded properties seems to be at least started toward a feasible solution but the question of how to and who shall determine the quotas and enforce their observance is a most difficult problem. Under the system practiced in the years 1930-31 pipe lines were arbitrarily announcing a certain percentage of their contracted runs. This system has been kept to a certain extent to this date but may lead to some abuse. A system satisfactory to all could undoubtedly worked-out by which supply and demand could be balanced; this would require a close cooperation between producers and refiners. A step in the right direction has been made recently at a meeting of these two groups of opposing interests. It is to be hoped that a satisfactory solution will be found.

Acknowledgments

The author is indebted to E. P. Bowler, Graduate Assistant in Petroleum and Natural Gas Engineering, for compiling some of the statistics which appear in this paper, and to E. L. Gamble, N. Y. A. student assistant, for drawing the illustrations.

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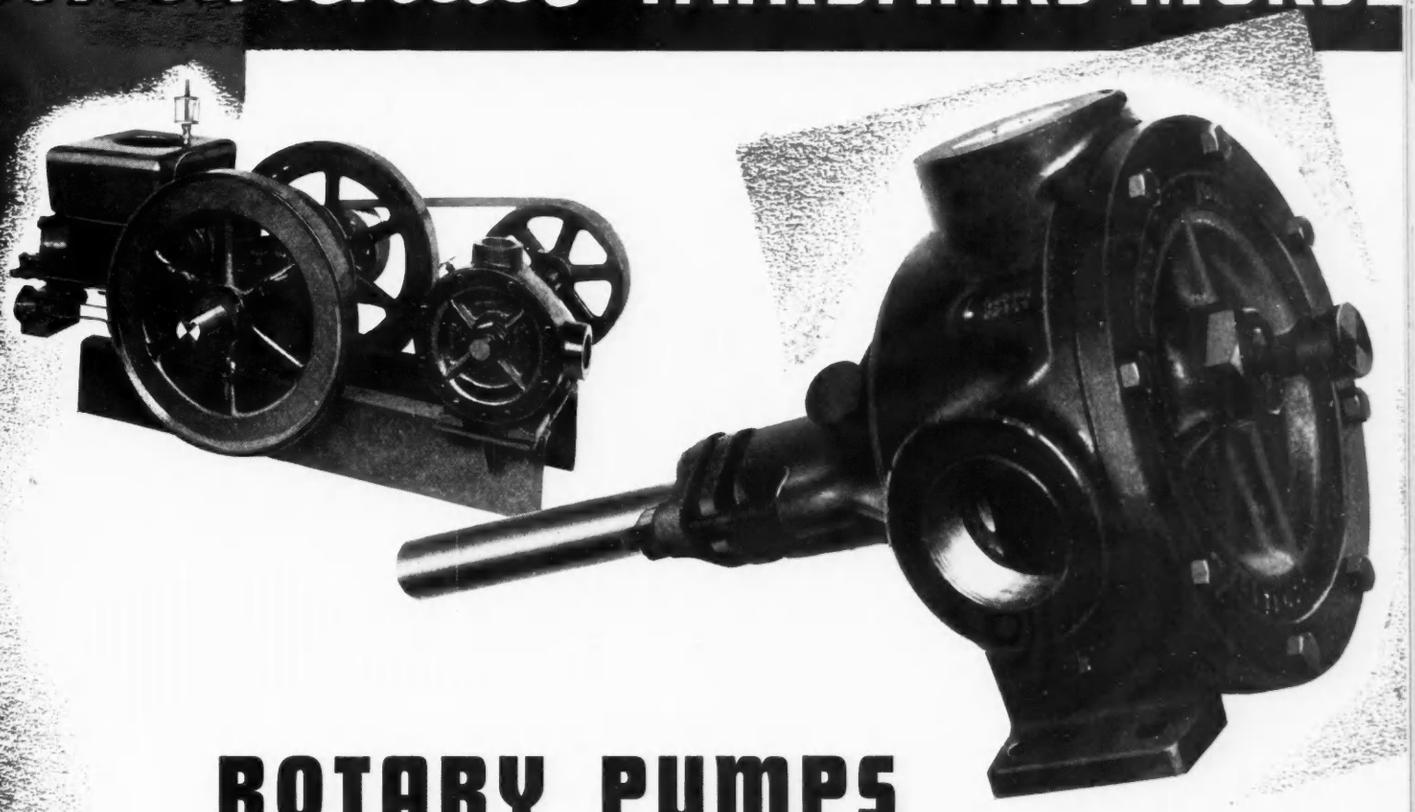

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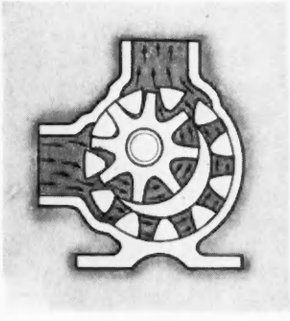
Internal view showing rotor and pinion, which are made in a variety of metals to suit varying service conditions.



The operating principle of the F-M Rotary Pump is shown clearly in this cross-sectional view. Fluid is denoted by the green area.

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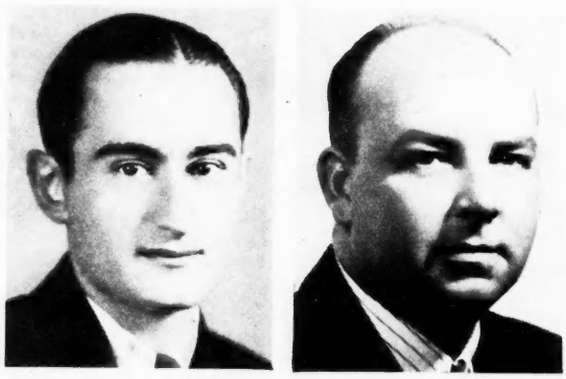
THE METHOD FOR DIFFERENTIATING BETWEEN

Sweet and Sour Gas

By SOL SMITH*
and
A. M. CROWELL†



SOL SMITH A. M. CROWELL

The Authors

They are, respectively, Chemical Engineer and Natural Gas Engineer, Railroad Commission of Texas.

THE Forty-fourth Legislature of Texas, in regular session, passed a bill known as House Bill 266, or the Small gas bill. The provisions of this law became effective August 1, 1935, and declared the policy of Texas with reference to the production and conservation of natural gas and correlative rights of owners of gas-producing properties. The law designated the uses to which sweet gas, sour gas, and casinghead gas may be put, and defined these type gases. For purpose of clarification, the sections of the law upon which this paper bears are quoted.

For the purposes of this Article, by the term "cubic foot of gas" is meant volume of gas expressed in cubic feet and computed at a base pressure of four (4) ounces per square inch above the average barometric pressure of 14.4 pounds per square inch, a standard base and flowing temperature of sixty (60) degrees Fahrenheit; correction to be made for pressure according to Boyle's Law, and for specific gravity according to test made by the Balance Method.

The term "sour gas" shall mean any natural gas containing more than one and one-half (1½) grains of hydrogen sulphide per one hundred (100) cubic feet or more than thirty (30) grains of total sulphur per one hundred (100) cubic feet, or gas which in its natural state is found by the Commission to be unfit for use in generating light or fuel for domestic purposes.

In addition to the purposes for which sweet gas produced from a gas well may be used, sour gas may be used for efficient chemical manufacturing purposes including the manufacture of carbon black provided it is utilized in a plant producing a recovery of not less than one (1) pound of carbon black to each one thousand cubic feet of gas, and provided further that the gasoline content is removed and saved from such sour gas before the same is utilized for carbon black.

The term "waste," among other things, specifically included:

The use of sweet gas produced from a gas well for the manufacture of carbon black.

The law further required periodic tests of gas wells to determine the open flow capacity, rock pressure of the well and hydrogen sulfide content of the gas produced from it.

Since the Railroad Commission of Texas is charged with the administration of this law, one of the many problems has been to ascertain an accurate but speedy method of determining the hydrogen-sulfide content of natural gas. Accuracy is essential for the reason that in fields producing sweet and sour gas both market outlet and price may be dependent upon the classification of the well. The need for speed is seen when it is understood that there are now 400 gas wells located in 10 sour-gas reservoirs, the status of which must be determined during January and July of each year.

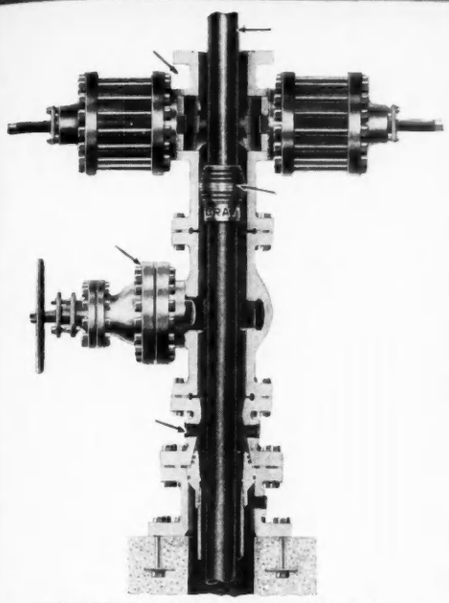
The commission now [January 1938] is engaged in the sixth survey of gas wells located in the reservoirs of the state. Its staff of chemical and natural-gas engineers has constantly experimented with and devised certain methods for the determination of hydrogen-sulfide and mercaptan content in natural gases over the entire state.

Panhandle Biggest Problem

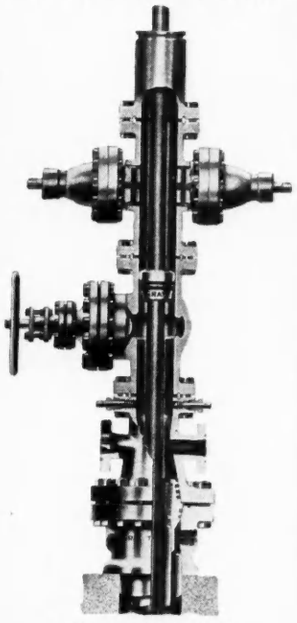
The Panhandle field, the largest gas reservoir in the world, is responsible for the enactment of the statute, and naturally presents the greatest problem. Of the 40 carbon-black plants in the state, 33 are located there, and produce 1,218,412 pounds of black daily, or 93 percent of the state's production. Geologists consider the Panhandle gas field as a common reservoir with sweet and sour gas occurring in the same formations. Since many of the carbon-black plants are located along the line of demarcation between the sweet and sour zones, it became necessary under the law to determine accurately the hydrogen sulfide and mercaptan content of the natural gas used in these plants.

Many papers have been written on the determination of the hydrogen-sulfide content of natural gases and among them several excellent methods have been developed. Patten[1] divides these tests into two types: (1) the colorimetric tests used for qualitative or

* Chemical Engineer, Railroad Commission of Texas.
† Natural Gas Engineer, Railroad Commission of Texas.



DRILLING AND CASING CONTROL



DRILLING-IN AND COMPLETION CONTROL

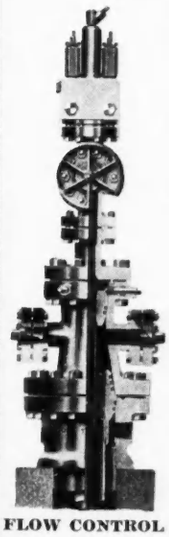


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TABLE 1
Spot Tests for the Determination of Hydrogen-Sulfide Gas*

Very Faint	Faint	Distinct	H_2S (gr./100 Cu. Ft.)
$Pb(Ac)_2$ Ag_2SO_4			.05
	$Pb(Ac)_2$ Ag_2SO_4		.10
		$Pb(Ac)_2$ Ag_2SO_4	.18
$CuSO_4$			.33
	$CuSO_4$		.59
		$CuSO_4$	1.05
$CdCl_2$	$SbCl_3$		1.86
	$CdCl_2$		3.36
$HgCl_2$			6.03
		$HgCl_2$	10.80

* Used by Canadian River Gas Company, Amarillo, Texas.

semi-quantitative tests, and (2) the absorption methods used for quantitative determinations. Under the first type he lists the common method of using lead acetate paper and causing a black precipitate to be deposited in the following manner:

$$Pb(Ac)_2 + H_2S \rightarrow PbS + 2HAc$$

The approximate amount of hydrogen sulfide in gases can be detected in this manner by suspending a strip of wetted filter paper in a glass container through which the gas is passed at a rate of about 5 cubic feet per hour. Besides using a 5 percent solution of lead acetate, others may be used as shown in Table 1. These spot tests range from 0 to over 10 grains of hydrogen sulfide per 100 cubic feet of gas and when checked by absorption methods fall into rather close range. These chemical solutions are approximately 5 percent in strength and give their individual characteristic color upon addition of hydrogen sulfide gas.

Truesdale[2] worked with various solutions to determine the sensitivity of these solutions for traces of hydrogen sulfide. Different concentrations and volumes of these were used. His results show that an alkaline solution of lead acetate proved to be the most satisfactory reagent in detecting very low concentrations of this gas.

A detector for quantitative estimation of low concentrations of hydrogen sulfide has recently been placed on the market. This apparatus will indicate hydrogen sulfide in the range of a few tenths of a grain to about 30 grains per 100 cubic feet. The working principle of this instrument is very much as that described in a paper by Littlefield[3], Yant, and Berger. Its operation is based on the color-change reaction on the surface of sensitized granules placed in a glass tube through which the gas to be examined is aspirated by means of a rubber bulb. The amount of hydrogen sulfide present in the gas is indicated by the distance the color change travels up the small tube containing the granules. A constant volume is used and the percent of hydrogen sulfide can be read directly on a calibrated scale paralleling the column of granules. These granules were prepared by coating activated aluminum oxide with silver cyanide or lead acetate, and it was found that the silver cyanide-coated granules gave more accurate results. Gases such as CO_2, CO, SO_2, Cl_2 and vapors of gasoline did not produce a color change, but mercaptans caused the granules to darken in the same manner as did the hydrogen sulfide. It was due to the presence of these mercaptans in the natural gas of the Panhandle that this detector could not be used.

For gases containing over 12 grains of hydrogen sulfide per 100 cubic feet, the Tutwiler[4] burrette is the most widely used method for quantitative analysis. The action of this apparatus depends upon the following equation:

$$H_2S + I_2 \rightarrow 2HI + S$$

Another method which can be used in the absence of a Tutwiler burrette is the absorption of the hydrogen sulfide in sodium hydroxide solution[5]. This solution is then acidified and titrated with iodine solution of a known normality. For a more accurate end-point, 15 to 20 cc. of normal barium chloride solution is added to the sodium hydroxide after absorption of the gas and before adding hydrochloric acid. Erroneous results will be obtained if mercaptans are present in the natural gas.

Detecting "Traces"

It therefore became necessary to devise some method by which "traces" of hydrogen sulfide (12 grains or less per 100 cubic feet) could be determined in natural gas. Devine[6], Wilhelm, and Schmidt absorbed the gas in a train of two tubes containing 20 cc. of .03 N silver sulfate solution and connected this train in series with a spray catcher and gas meter. After a black precipitate is formed in the first scrubber bottle, the apparatus is disconnected and the solutions combined, volume brought up to approximately 100 cc. with distilled water and filtered to remove the precipitate. To the filtrate, 20 cc. of .03 N sodium chloride solution is added and the titration made with .03 N silver sulfate, using a saturated solution of sodium chromate as an indicator. The chemical reaction involved is as follows:

$$H_2S + Ag_2SO_4 \rightarrow Ag_2S + H_2SO_4$$

This absorption method also cannot be used on gases that contain unsaturates or mercaptans.

In determining the hydrogen sulfide in refinery still gases, Scharnagel[7] and Trusty found the iodine titration unsatisfactory because of the unsaturated hydrocarbons present in the gas. To overcome this they absorbed the gas in 100 cc. of .1 N acid lead nitrate and titrated with ammonium molybdate solution.

Horne[8] and Shirley experimented with solutions of cadmium chloride, sodium hydroxide, and sodium carbonate as absorbents of the gas. The cadmium chloride solution did not completely catch the hydrogen sulfide due to the fast rate of flow of the gas. A slow returning end point was found in the titration of the sodium sulfide with iodine solution. However, the sodium carbonate solution gave very accurate results as an absorbent.

Perhaps the most recent investigation on this subject was that carried out by Lilly[9] and Chesnutt. Their procedure was based on the action of hydrogen sulfide upon ceric sulfate as follows:

$$2\,Ce(SO_4)_2 + H_2S \rightarrow Ce_2(SO_4)_3 + S + H_2SO_4$$

The field apparatus consists of an absorber fitted with a spray trap about it. A two-way stop cock on the lower end of the absorber connects it to the feed line from the gas well and also to an Erlenmeyer flask. The other end of the spray trap is connected to a wet-test meter which records the flow of the gas. The gas from the flow line of the well is bubbled through the Jena-glass absorber containing 10 cc. of standard ceric sulfate, diluted approximately to 20 cc. with distilled water. The saturation point can be observed by the changing of the yellow ceric ion to the colorless cerous ion. When the absorption is finished, the solution is allowed to drain into the flask

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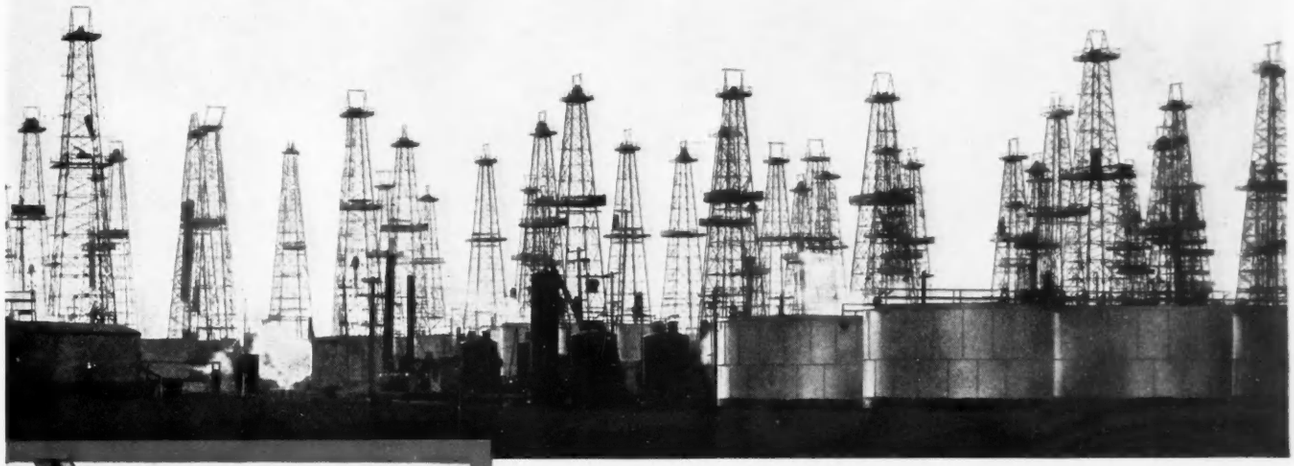

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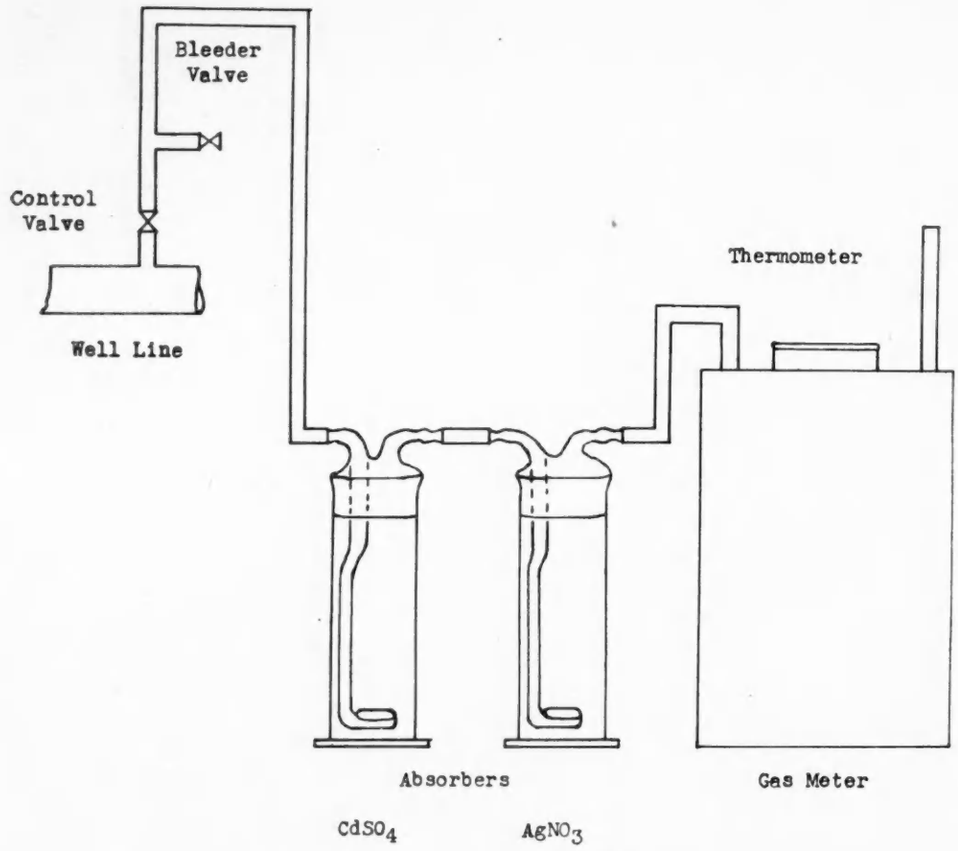

FIGURE 1
Set up of field apparatus

and is titrated with N/.1 ferrous sulfate, using orthophenanthroline ferrous complex as an indicator. This investigation shows that the ceric sulfate gave good results for the determination of hydrogen sulfide in the presence of the heavier mercaptans, and that experimentation has not as yet been continued with this method in the presence of the lighter mercaptans.

Selection of Chemical Solutions

Since the natural gas of the Texas Panhandle contains mercaptans in varying amounts, it became necessary to devise some method of determination that would embrace the following factors:

(1) The selection of a chemical solution which would completely absorb all of the hydrogen sulfide in the natural gas and allow the mercaptans to pass on.
(2) The use of an absorbent which would catch the above separated mercaptans.
(3) Complete absorption of these gases by use of properly designed scrubbing bottles.

After carrying out a number of tests with cadmium sulfate and cadmium chloride in alkaline, neutral, and acid solutions,[1] it was found that neutral cadmium sulfate was the best absorbent tried. Cadmium salts were used because of high solubility of the cadmium sulfide formed. Since the mercaptans also have weak acidic properties, the hydrogen ion concentration of the cadmium sulfate solution is now slightly raised by the addition of a few cc. of .1N sulphuric acid. This prevents the mercaptans from being absorbed in the sulfate solution and aids in a complete separation of the two gases.

A .025 N solution of silver nitrate was found very successful in absorbing the mercaptan gas passing over from the first scrubber bottle.

Rhodes[10] and Rakestraw experimented with 8 different types of washing bottles to determine their comparative efficiencies. The Friedricks spiral containing solution 11 cm. high under normal operation, gave the best scrubbing effect even under high rates of flow and with concentration of CO_2 gas as high as 13.4 percent. A Schott and Gen. (Jena) absorber, with sintered-glass distributing plate, using a solution of 15.5 cm. high in the bottle gave almost as efficient absorption as the Friedricks spiral.

Halberstadt[11] states that for complete absorption two factors are of importance.

(1) Length of passage in which liquid and gas are in contact.
(2) Size of the gas bubbles dispersed within the liquid.

He worked with several different types of washing bottles under varying amounts of concentration, velocity, and height of solution. Barium hydroxide solution was the reagent used to absorb the carbon dioxide gas (concentrations from .67 to 17 percent). The Greiner and Friedricks gas-washing bottle proved the best suited for high concentration of the gas while the glass-filter gas washer were the most efficient for low concentrations since more rapid rates of flow could be used.

The first type of absorber used by the commission was a very simple one made from a 1 x 8-inch test tube fitted with a two-hole rubber stopper, through which passed a glass inlet tube extending almost to the bottom of the test tube.[1] This absorber, though crude as compared to the one in present use, has been checked by the latter to as close as .1 grains of hydrogen sulfide and mercaptan gases.

The absorber now used is of the Schott type with a Jena-fritted-glass disk extending down the inside

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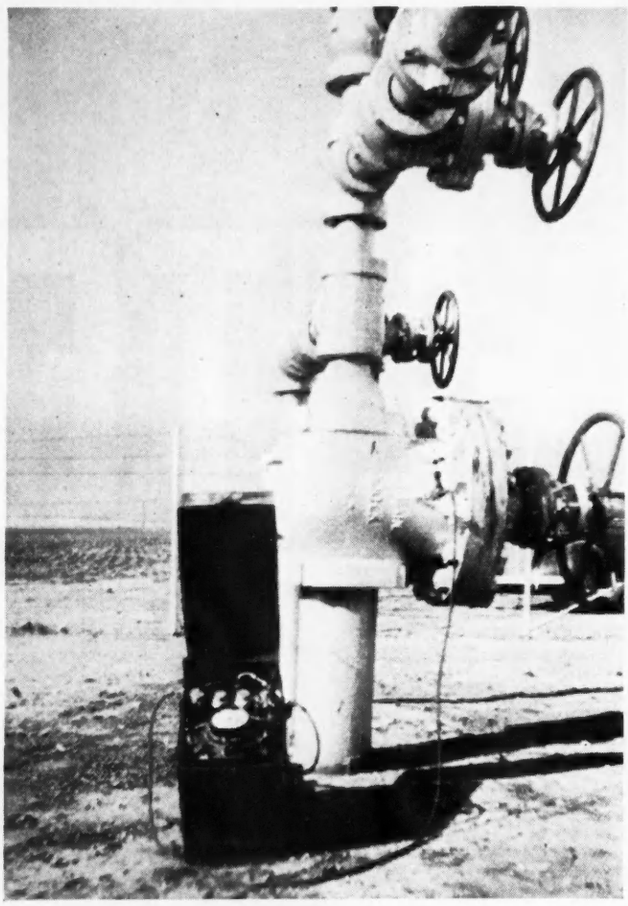

FIGURE 2
Gas sample being taken off well head. Absorbers are concealed in meter box.

of the bottle as shown in Figure 1. The approximate pore diameters are from 100 to 120 microns, giving a fine dispersion of gas. This fritted-glass disk, 20 mm. in diameter, is fused to the gas inlet tube extending down through a ground-glass stopper. The bottle is 200 mm. high, 44 mm. in diameter, and has a capacity of 100 cc.

Field Test Apparatus

A complete set-up of the field apparatus for determining the hydrogen sulfide and mercaptan content of a natural gas may be seen in Figure 1. Into the first absorber, 40 cc. of .5N cadmium sulfate solution and 3 cc. of .1 N sulphuric acid are introduced by means of a pipette. The second absorber contains 40 cc. of .025 N silver nitrate solution. These two absorbers are connected by a short piece of sulfur-free rubber tubing, while the gas outlet of the second absorber is connected to a dry-test meter.

It is important that the gas procured be a representative sample. If gas is allowed to remain in the well for a period of time, it may be stripped of part of its hydrogen sulfide due to the action of the gas upon the steel tubing. Also, without any circulation of the gas in the well, the hydrogen sulfide and mercaptans present will tend to settle to the bottom of the hole due to their higher specific gravities. For this reason, shut-in wells should be blown for several minutes before testing, to be sure that a true sample is run into the absorbers. Whenever possible, samples are taken from the well head, the closest point to the source of the gas. If ¼-inch connections are not placed on the well and proper connections are not available to swedge the christmas tree down to the desired dimensions, then it is advisable to obtain the sample from the meter setting.

Procuring a Sample

When all of the proper connections are made, the test is ready to begin. The flow of gas through the absorbers is regulated by the control valve, while the bleeder valve enables a more representative sample to enter the washing bottles. The gas is passed at a rate of about 2 cubic feet per hour. The formation of a yellow cadmium sulfide precipitate indicates that the gas contains appreciable quantities of hydrogen sulfide and the solution is approaching its saturation point. For wells containing this sour gas, approximately .3 cubic feet of gas is passed. On the other hand, if there is no color change in the cadmium sulfate solution, the test is allowed to run from 2 to 4 cubic feet.

Upon completion of the test, the absorption train is disconnected and carried to the laboratory for titration. The cadmium sulfate solution reacts with the hydrogen sulfide to give a cadmium sulfide precipitate and sulphuric acid:

$$CdSO_4 + H_2S \rightarrow CdS + H_2SO_4$$

The volume is brought up to approximately 75 cc. with distilled water and 15 cc. of concentrated hydrochloric acid added to dissolve the precipitate.

$$CdS + 2HCl \rightarrow H_2S + CdCl_2$$

Upon addition of 10 cc. of .025 normal iodine solution, the hydrogen sulfide that has been placed in solution reacts with the iodine according to the following equation:

$$H_2S + I_2 \rightarrow 2\,HI + S$$

The titration of the excess iodine with .025 normal sodium thio sulfate solution is carried out in the same absorption vessel. Freshly-prepared starch solution is used as an indicator and is not added until nearly all of the iodine color has disappeared. This gives a very sharp endpoint which can easily be detected. The final chemical reaction is as follows:

$$I_2 + 2\,Na_2S_2O_3 \rightarrow 2\,NaI + Na_2S_4O_6$$

From the above equation it can be seen that the iodine used is equivalent to the thio sulfate solution plus the hydrogen sulfide absorbed. Therefore the calculations for hydrogen sulfide is as follows:

$$G = \frac{(I - S)\ (.6573)}{V}$$

where:
G = Grains of hydrogen sulfide per 100 cubic feet
I = Iodine solution used, cc.
S = Sodium thio sulfate solution used, cc.
V = Corrected gas volume, cubic feet (60 deg. F. and 14.7 lbs. per sq. in.)

The factor .6573 is arrived at in the following manner:

17.0378 grams of H_2S per 1000 cc. x 15.432 grains per gram x .025 normality
= 6.573 grains per 1000 cc. per one cubic foot of gas
= .006573 grains per cc. per one cubic foot of gas
= .6573 grains per cc. per 100 cubic feet of gas

In the case of the mercaptan gas, the reaction is as follows:

$$AgNO_3 + R\text{-}SH \rightarrow AgRS + HNO_3$$

Then 40 cc. of .025 normal sodium chloride solution are added, forming a white precipitate of silver chloride and the neutral sodium mercaptide.

$$AgRs + NaCl \rightarrow AgCl + NaRS$$

The excess sodium chloride is back titrated with sil-

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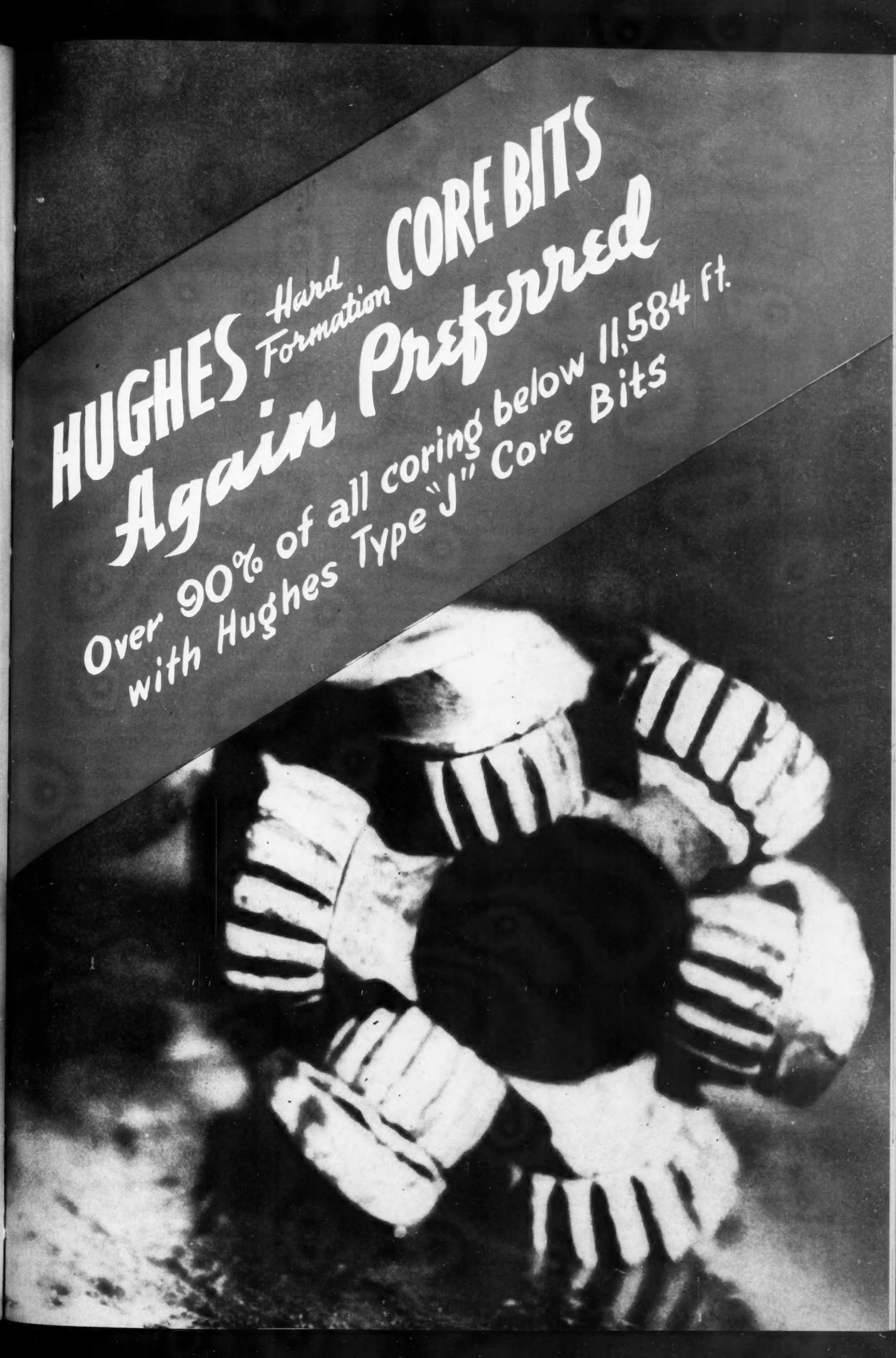

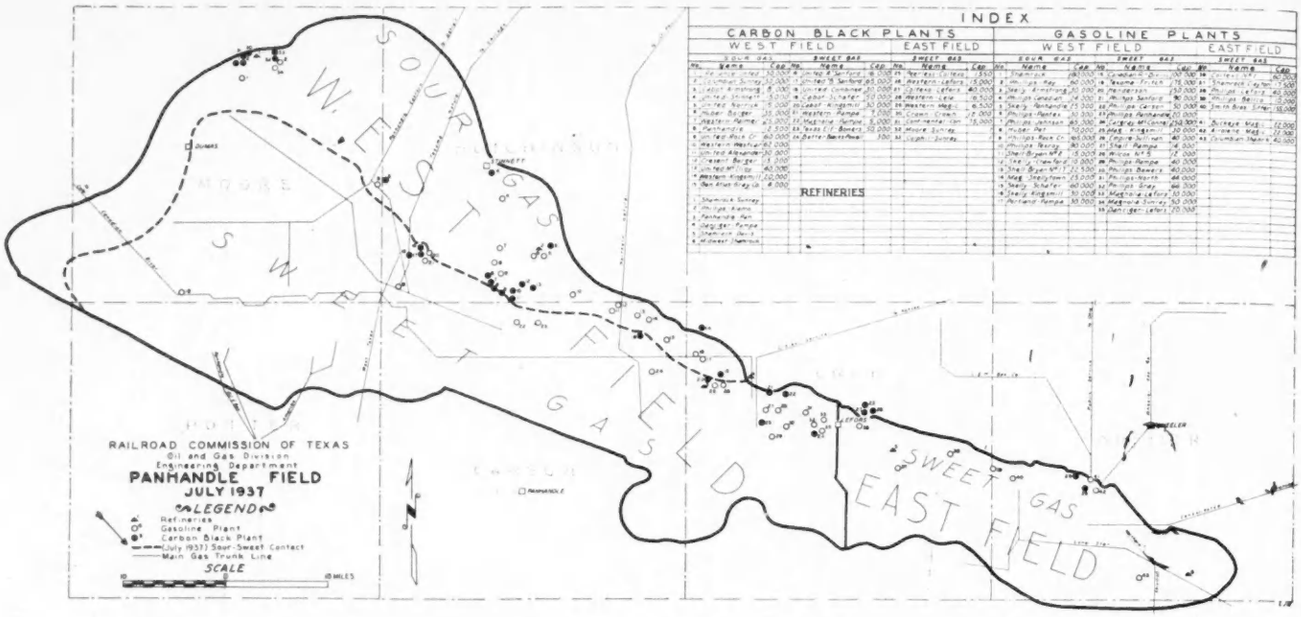

ver nitrate solution, using a saturated solution of sodium chromate as an indicator. The end point is detected as the first permanent orange color obtained. Calculations for the mercaptans are carried out as follows:

$$G = \frac{(S)\ (1.3146)}{V}$$

where:

G = Grains of mercaptan per 100 cubic feet
S = Silver nitrate used in titration, cc.
V = Corrected gas volume, cubic feet (60° F. and 14.7 lbs. per sq. in.)

The factor for the mercaptan is twice that of hydrogen sulfide because mercaptan contains only one replaceable hydrogen as compared with two for hydrogen sulfide. The values for hydrogen sulfide and mercaptan are combined in determining the status of the well. Chemically speaking, mercaptans[12] are thio-alcohols, or hydrosulfides having the general formula of R-SH. Methyl mercaptan, CH_3SH, and ethyl mercaptan, C_2H_5SH, are the two most commonly found in natural gas. These compounds have the same relation to hydrogen sulfide as the alcohols to water. They have a very nauseous smell and are easily detected even when present in very small concentrations.

The sweet-sour contact line extends for over 100 miles across Gray, Carson, Hutchinson, Moore, and Hartley Counties in the Texas Panhandle. In the fifth survey of the field (July, 1937), 122 gas wells were tested for their hydrogen sulfide and mercaptan content. Since 1935 this line of demarcation has shifted only slightly. This was probably caused by local withdrawal conditions in particular sections of the field. However, in general, the line was found to be very sharp; that is, a distinct separation between the sweet and sour areas. Even so, several purchasers of pipe line gas decline to run gas through their lines that contains as much as 1 grain of H_2S per 100 cubic feet.

Table 2 has been compiled to show the varying concentrations of the sulfur gases in wells along the contact line, and give the fluctuations in sulfur content over a period of two years. The four columns listed under each well are for January, 1936, July, 1936, January, 1937, and July, 1937, respectively.

TABLE 2

Well No.	H_2S	R-SH	Total
1	.25	.50	.75
	.19	.95	1.14
	.00	.91	.91
	.31	.88	1.19
2	.24	.62	.86
	.28	.39	.67
	.00	.71	.71
	.08	.51	.59
3	1.89	.92	2.81
	1.34	.75	2.09
	1.95	1.76	3.71
	.80	1.83	2.63
4	.64	.45	1.09
	.19	.50	.69
	.14	.78	.92
	.27	.59	.86
5	.10	.65	.75
	.51	.44	.95
	.30	.78	1.08
	.41	.96	1.37
6	.64	.51	1.15
	.27	.34	.61
	2.53	1.07	3.60
	.17	2.30	2.47

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South Louisiana Reserves Enhanced During 1937

By CHARLES B. LEYENDECKER

SOUTH Louisiana, an area embracing 32 parishes lying north of the Gulf of Mexico between Texas and Mississippi, has an estimated 437,255,000 barrels of known unproduced crude oil ending January 1, 1938. It is estimated 175,730,000 barrels of new oil were found in the district during 1937 in a number of new fields, new sand discoveries and extensions.

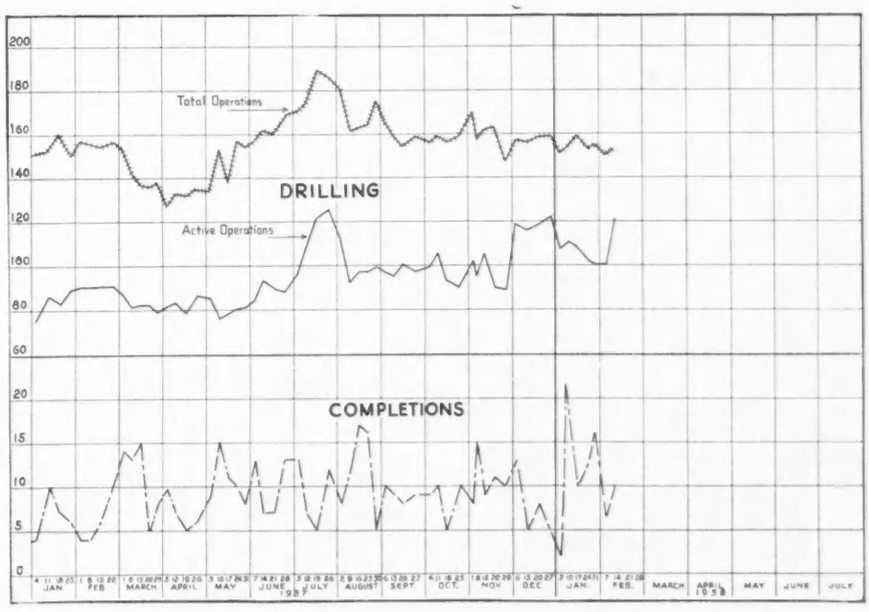
During 1937 there were 63,000,000 barrels of oil produced in South Louisiana. This is an all-time peak for production. In the last 37 years the area has yielded 331,345,000 barrels of oil. This includes the producing and abandoned fields. In the 60 commercial fields in the Louisiana Gulf Coast there are an estimated 20,445 proven acres. However, part of this acreage has not been proven by the bit but it is believed that the 60 fields will cover this amount of acreage.

Louisiana's coastal area has 58.2 percent of the reserves of the state. Although the area ranks low in percentage of the United States reserves it is expected that this percentage will increase in the future. The reason for this belief is that the district is nearly all virgin country and with deeper drilling more oil will be discovered.

South Louisiana outranks all other districts in the world in deep drilling. No doubt with this continued trend of drilling the district will discover more fields of the Lafitte type. This field is the largest in South Louisiana, having an estimated 2500 proven acres. This is 1000 acres more than the next largest field in area. Lafitte is the first 100,000,000-barrel field to be discovered in the area. The 1937 estimate on the field was 75,000,000, but was increased to 100,000,000 when the field was extended and new sands discovered.

There has not been a dry hole drilled to date. It is producing from 9400 to 10,500 feet, and wells that have been drilled below 12,000 feet have shown evidence of commercial production in new sands. Already there are five or six good sands at Lafitte. It is believed that this field will yield oil below 13,000 and some are saying it will produce oil at 15,000 feet.

Lafitte is producing from the lower section of the Miocene and the upper



Louisiana Gulf Coast drilling activity is near all-time peak.

part of the Oligocene. The lower section of the Oligocene has not been tested. Lafitte was the forerunner of extremely deep drilling in South Louisiana. Since the field has been discovered a number of fields have been discovered from this deep sand, which is referred to as the "Lafitte sand."

Operators are becoming more reconciled to flank drilling around old salt domes in this district. It is noticeable that since they have been drilling around flanks of these old domes they have been repaid. Venice and Jennings are probably the most outstanding examples. Jennings, the first commercial oil field in South Louisiana, is the most active field in the district because of new sands discovered on the south and west side. It has been shown by the bit that there is a new sand on the north flank of the field, which will add several thousand barrels of new reserve to the field. Six tests had to be drilled at Venice before commercial production was found. The persistent operators were rewarded with a 7,000,000 barrel field, and this probably will be increased with future drilling.

Old fields which have produced a small amount of oil and never believed to be commercial are proving to be good fields. This is being done by deeper drilling. Such fields as Anse La Butte, Bay St. Elaine, Bavou Blue, Big Lake, Choctaw, Lake Hermitage, are being developed for deep sands. Several wells have cored sands showing oil and give promise of raising reserves in these respective fields.

Drilling Increases

It has been estimated that drilling in Louisiana Gulf Coast will be up 25 percent during 1938. Last year drilling was up to an all-time peak. The reason for the increased drilling is the number of new discoveries and flank development. Several oil companies have stated that they will drill more in the district during the coming year than last year. A number of large blocks come due in 1938. One major company has started its wildcat campaign after several years of geophysical work in which around 300,000 acres were accumulated.

Over 100 active rigs are in operation in South Louisiana and around 150 total operations. This will increase during 1938. Already operators are moving rigs into the territory to start on new drilling programs. There has been an average of three wildcat locations each week since the first of the year. Already there have been two new fields discovered in the district, and a number of other wildcats are approaching critical depths. Their outcome should be known by the end of March.

South Louisiana Reserves by Fields

FIELDS	Parish	Proven Acreage	ESTIMATED ULTIMATE RECOVERY				Cumulative Production Jan. 1, 1938	Reserves
			Jan., 1937	Jan., 1938	Increase	Remarks		
Abbeville	Vermilion	500	1,000,000	5,000,000	4,000,000	Extension and new sand	25,000	4,975,000
Anse La Butte	St. Martin	45	1,000,000	1,000,000	.....	.....	898,000	112,000
Bateman Lake	St. Mary	100	.....	2,000,000	2,000,000	New field	.....	2,000,000
Bay St. Elaine	Terrebonne	100	.....	1,000,000	1,000,000	First commercial well	53,000	947,000
Black Bayou	Cameron	200	10,000,000	10,000,000	.....	.....	4,695,000	5,305,000
Bayou Blue	Iberville	*25	70,000	100,000	30,000	New sand	74,000	26,000
Bayou Des Allemands	St. Charles	100	.....	2,000,000	2,000,000	New field	45,000	1,955,000
Bayou Mallet	Acadia	100	1,000,000	1,000,000	.....	.....	120,000	880,000
Bosco and Cankton	Acadia-St. Landry	1,500	30,000,000	30,000,000	.....	.....	15,010.000	14,990,000
Big Lake	Cameron	100	1,000,000	1,000,000	.....	.....	50,000	950,000
Caillou Island	Terrebonne	600	25,000,000	45,000,000	20,000,000	Extensions and new sands	16,098,000	28,902,000
Cameron Meadows	Cameron	350	15,000,000	15,000,000	.....	.....	4,943,000	10,057,000
Charenton	St. Mary	200	1,000,000	4,000,000	3,000,000	New sands and extensions	260,000	3,740,000
Choctaw	Iberville	90	5,000,000	5,000,000	.....	.....	1,725,000	3,275,000
Darrow	Ascension	200	15,000,000	15,000,000	.....	.....	1,510,000	13,490,000
Dog Lake	Terrebonne	100	5,000,000	5,000,000	.....	.....	993,000	4,007,000
Edgerly	Calcasieu	215	10,000,000	10,000,000	.....	.....	8,481,000	1,519,000
Evangeline (Jennings)	Acadia	475	60,000,000	70,000,000	10,000,000	Flank development	55,317,000	14,683,000
East Hackberry	Cameron	450	25,000,000	35,000,000	10,000,000	Extensions and new sands	18,811,000	16,189,000
Four Isle	Terrebonne	100	3,000,000	3,000,000	.....	.....	292,000	2,708,000
Garden Island	Plaquemines	100	3,000,000	3,000,000	.....	.....	1,020,000	1,980,000
Gibson	Terrebonne	900	.....	18,000,000	18,000,000	New field	425,000	17,575,000
Gillis-English Bayou	Calcasieu	1,000	22,000,000	22,000,000	.....	.....	13,012,000	8,988,000
Gueydan	Vermilion	75	1,500,000	1,500,000	.....	.....	731,000	769,000
Horseshoe Bayou	St. Mary	400	.....	8,000,000	8,000,000	New field	76,000	7,924,000
Iowa	Jeff Davis-Calcasieu	1,000	45,000,000	45,000,000	.....	.....	29,255,000	15,745,000
Jeanerette	St. Mary	225	10,000.000	12,500,000	2,500,000	Extensions and new sands	3,279,000	9,221,000
Lafitte	Jefferson	2,500	75,000,000	100,000,000	25,000,000	Extensions and new sands	6,989,000	93,011,000
Lake Barre	Terrebonne	425	20,000,000	20,000,000	.....	.....	16,232,000	3,768,000
Lake Hermitage	Plaquemines	75	1,000,000	1,000,000	.....	.....	110,000	890,000
Lake Long	Lafourche	400	.....	5,000,000	5,000,000	New field	83,000	4,917,000
Lake Pelto	Terrebonne	100	1,000,000	5,000,000	4,000,000	New sands and extensions	748,000	4,252,000
Lake Washington	Plaquemines	150	5,000,000	5,000,000	.....	.....	2,087,000	2,913,000
Leeville	Lafourche	325	25,000,000	25,000,000	.....	.....	17,619,000	7,381,000
Lirette	Terrebonne	150	.....	1,000,000	1,000,000	New field	30,000	970,000
Lockport	Calcasieu	300	20,000,000	20,000,000	.....	.....	14,465,000	5,535,000
New Iberia	Iberia	200	15,000,000	20,000,000	5,000,000	New sands and extensions	9,333,000	10,667,000
North Crowley	Acadia	800	.....	8,000,000	8,000,000	New field	30,000	7,970,000
Old Hackberry	Cameron	225	4,000,000	12,000,000	8,000,000	New sand and extensions	3,845,000	8,155,000
Port Barre	St. Landry	275	9,500,000	9,500,000	.....	.....	6,798,000	2,702,000
Potash	Plaquemines	50	.....	200,000	200,000	New field	.....	200,000
Quarantine Bay	Plaquemines	500	.....	12,000,000	12,000,000	New field	.....	12,000,000
Sorrento	Ascension	100	2,000,000	2,000,000	.....	.....	847,000	1,153,000
South Elton	Jeff Davis	100	.....	1,000,000	1,000,000	New field	5,000	995,000
South Jennings	Jeff Davis	100	1,000,000	1,000,000	.....	.....	5,000	995,000
South Roanoke	Jeff Davis	100	.....	1,000,000	1,000,000	New field	5,000	995,000
Roanoke	Jeff Davis	850	10,000,000	13,000,000	3,000,000	Extensions	5,995,000	7,005,000
Starks	Calcasieu	95	4,000,000	4,000,000	.....	.....	2,369,000	1,631,000
St. Martinville	St. Martin	100	2,000,000	2,000,000	.....	.....	555,000	1,445,000
Sulphur	Calcasieu	180	20,000,000	20,000,000	.....	.....	11,460,000	8,540,000
Sweet Lake	Cameron	100	6,500,000	6,500,000	.....	.....	3,584,000	2,916,000
Tepetate	Acadia	1,500	20,000,000	20,000,000	.....	.....	3,727,000	16,273,000
Valentine	Lafourche	350	5,000,000	15,000,000	10,000,000	New sands	975,000	14,025,000
Venice	Plaquemines	150	.....	7,000,000	7,000,000	New field	175,000	6,825,000
Villa Plate	Evangeline	500	.....	5,000,000	5,000,000	New field	50,000	4,950,000
Vinton	Calcasieu	270	50,000,000	50,000,000	.....	.....	42,601,000	7,399,000
Welsh	Jeff Davis	50	750,000	750,000	.....	.....	610,000	140,000
White Castle	Iberville	175	6,000,000	6,000,000	.....	.....	2,265,000	3,735,000
Total	.....	20,445	592,320,000	768,050,000	175,730,000	.....	330,795,000	437,255,000

* Fields which were abandoned but came back in for production.

Abandoned fields not tabulated above have produced 550,000 barrels, raising South Louisiana cumulative production to 331,345,000 barrels. These fields are Bayou Bouillon, Fausse Point, and Pine Prairie.

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MEN IN THE INDUSTRY'S NEWS

EXECUTIVE CHANGES IN PRODUCING DEPARTMENT OF THE TEXAS COMPANY MOVES E. R. FILLEY TO HOUSTON

H. N. PARDEE; M. J. HEALD AND H. S. COLE FIGURE IN PROMOTIONS ALSO

SEVERAL executive changes in the producing division of The Texas Company were announced by W. S. S. Rodgers last week.

E. R. Filley, for a number of years manager of the company's Oklahoma-Kansas Division will, effective March 1, 1938, become assistant manager of the producing department, Delaware Company. He will move his headquarters from Tulsa to Houston.

H. N. Pardee, who has been assistant division manager of the Oklahoma-Kansas Division, will succeed Filley as division manager at Tulsa.

M. J. Heald, who has been assistant division manager of the Rocky Mountain Division, effective March 1, will become assistant division manager of the Oklahoma-Kansas Division, and will make headquarters in Tulsa.

H. S. Cole, Jr., at present general superintendent of the Production, Drilling and Gasoline Division of The Texas Company of California, will, effective February 15, 1938, become assistant division manager of the West Texas Division, with headquarters at Fort Worth, Texas.

Filley has been with The Texas Company for more than 20 years, and has been active in directing the activities of the Oklahoma-Kansas Division of the Mid-Continent Oil & Gas Association.

Blank & Stoller

H. N. PARDEE

E. R. FILLEY

Pardee obtained his first job in the oil business as a roustabout with Standard Oil Company of California in 1908. Since that time he has served with various companies in different capacities in scattered areas, and for a while operated as an independent. He served as proration umpire in the Winkler field of West Texas. He resigned this position on November 15, 1928, to reenter The Texas Company as assistant division manager of the Producing Department at Fort Worth. On July 1, 1929, he was transferred to Tulsa to act in the same capacity.

W. W. FONDREN, board chairman of Fondren Production Company, Houston, and former vice president of Humble Oil & Refining Company, was guest of honor at a luncheon given by officials of Southern Methodist University at Dallas February 8. Fondren gave the university $400,000 for a library some years ago. He has not been active in the oil business for 4 years when failing health caused his retirement from Humble Oil & Refining Company.

E. G. GAYLORD, with Standard Oil Company of California, has recently been named 1938 chairman of the advisory committee on fundamental research on occurrence and recovery of petroleum of American Petroleum Institute's division of production.

J. O. HARPER, scout for Pure Oil Company in the north portion of the West Texas Permian basin with headquarters at Lubbock, has been transferred to the land department in the same district. H scouting duties have been shifted to M. M. Aingell, who has been covering the tri-state district, centering around Rodessa, and the latter will be succeeded by Joel Sims, formerly in the company's production department at Van, Texas.

FRED TURNER, JR., Midland, Texas, operator with a string of race horses as a hobby, does not have as much faith in the performance of his ponies as his West Texas drilling projects. He failed to back his mare, Playmay when she won a race at Santa Anita, that paid $673.40 for $2.

H. W. SANSOM, area manager at Tampico for Compania Mexicana de Petroleo "El Aguila," gave an informal luncheon for a few employes on February 3, but the affair back-fired on the host when an associate recalled that date as Sansom's 41st birthday. The luncheon inadvertently turned into a birthday party. Those in attendance, besides Sansom, were: A. S. Gulston, general field superintendent; L. C. H. Chase, administrator for north fields and British vice consul; C. B. Roach, exploration engineer; John S. Gaynor, assistant general field superintendent; C. W. Lowerse, acting refinery superintendent; Allen Payne, chief of the land department; Robert Pennell, secretary to Sansom; J. Stead, Tuxpam district superintendent; all with "El Aguila"; S. R. Reed, marine superintendent for Mexican-Sinclair Oil Company; and Brad Mills, associate editor, The OIL WEEKLY.

NORMAN WHITTALL, Vancouver, B.C., was in Calgary, Alberta, last week in connection with several deals for West Canadian tests to be undertaken this spring.

JAMES F. M. MOODIE, president and managing director of Sentinel Oils, Ltd., Alberta producing company, is recovering at his home from a recent accident.

BEN WAHL, of Duncan Oil Company, left Flora, Illinois, last week for a vacation in Shreveport, Louisiana. He plans to visit Fort Worth, Texas, his home, before returning to Illinois.

H. A. "ANDY" EKLUND, formerly of Boone Brothers Oil Company, Houston, and at one time with the old Waite Phillips Company and Barnsdall Oil Company, has been named head of the land and leasing division of British American Oil Producing Company, subsidiary of British American Oil Company, Ltd. Eklund will serve under H. C. Arnold, manager of the geological and land department, making his headquarters in Tulsa.

D. A. McGEE, former chief geologist for Phillips Petroleum Company, has been named a vice president and chief geologist in charge of production for the Kerlyn Oil Company. T. M. Kerr, director of the company for several years, was named a vice president.

A. F. HOLLIDAY, president of Hiawatha Oil and Gas Company, Pittsburgh, recently returned to his home after a brief business trip to Houston.

GEORGE CORLESS AND W. H. GEIS ELECTED CHAIRMAN AND VICE CHAIRMAN OF PETROLEUM DIVISION OF A.I.M.E.

GEORGE B. CORLESS

WILLIAM C. KNEALE, former district geologist for The Texas Company in Illinois with headquarters in Mattoon, has been named Illinois and Indiana district superintendent for the company. He will be succeeded as district geologist by B. M. Miller, who served as assistant district geologist. Kneale will make his headquarters in Mt. Vernon or Fairfield.

C. B. McCLINTOCK, geologist, discussed "Fortunes Underground" before members of the Oil City, Pennsylvania, Adelphoi Club last week.

WILLIAM HERRON, JR., son of W. S. Herron, pioneer Alberta oil operator known as "the father of Turner Valley," is being praised for his success and blamed for his foolhardiness in recovering a lost bit at Okalta Oils, Ltd.'s 6 in the Turner Valley field. The hole was cased with 21-inch to 70 feet. When the line broke and the tools were lost, Herron ordered himself lowered to 90 feet, including 20 feet of open hole that was badly caved, and surveyed the situation with a flashlight. On the second trip down, he connected the tools which were well over to the side of the hole and they were removed. Caving in the gravel formation was so bad that Herron was unable to touch the sides of hole with his arms outstretched. The entire operation required less than an hour.

J. F. NORTON, geologist of Lincoln, is in Taylor, Nebraska, from where he is studying 15,000 acres of Loup County land under lease for oil exploration by Homestead Corporation. A test is planned along the Calamus river north of Taylor.

E. H. BECKMAN, with the scouting department of Pure Oil Company, Houston, recently became married to Miss Ella Louise Brown.

BENJAMIN C. CRAFT NAMED SECRETARY-TREASURER

THE Petroleum Division of the American Institute of Mining and Metallurgical Engineers, conventioning in New York on February 14 to 18, inclusive, has chosen George B. Corless, Humble Oil & Refining Company, Houston, as its 1938 chairman. W. H. Geis, geologist of Pasadena, California, was chosen vice chairman. Corless succeeds M. Albertson, Shell Petroleum Corporation, Houston. Geis succeeds R. P. McLaughlin, general manager of Burnham Exploration Company, Los Angeles.

Election of Professor Benjamin C. Craft, petroleum engineer with Louisiana State University, Baton Rouge, as secretary-treasurer was announced during the meeting. Craft takes the place of Professor Eugene A. Stephenson of the University of Kansas.

Following his election as chairman of the Petroleum Division, Corless became chairman of the executive committee also.

Other members elected to serve on the executive committee during the 1938 regime include M. Albertson; D. R. Knowlton, general superintendent, Phillips Petroleum Company, Bartlesville, Okla.; R. P. McLaughlin; Hallan N. Marsh, production engineer with General Petroleum Corporation, Los Angeles, who was on the committee during 1937 also; Theron Wasson, chief geologist, Pure Oil Company, Chicago.

M. L. Haider, petroleum engineer with Carter Oil Company, Tulsa, was elected vice chairman in charge of the production engineering section of the Petroleum Division. Elections brought out that he will be assisted by three associate vice chairmen in the production engineering section. These will be Joseph Chalmers, DeBataafsche Petroleum Maatschappij, The Hague, Holland; Emile Hugunin, deputy state oil and gas supervisor of California; and Carl E. Reistle, Jr., petroleum engineering department, Humble Oil & Refining Company, Houston. Haider succeeds T. V. Moore, Humble Oil & Refining Company. The other members on the production engineering committee served during the 1937 regime.

He was in Colombia, South America, when announcement of his election was made, but James Terry Duce, The Texas Company, New York, was re-elected vice chairman in charge of the production division. As was the case last year, during 1938 he will be assisted again by Basil B. Zavoico of Houston, representative there for Chase National Bank of New York.

Another re-election was that of R. L. Huntington, associate professor of petroleum engineering at the University of Oklahoma, Norman, Okla., as vice chairman for the section devoted to engineering research.

Ballots put Sidney A. Swensrud, assistant to the president of Standard Oil Company of Ohio, back in the chair as vice chairman of petroleum economics. While Walter Miller, vice president of Continental Oil Company, Ponca City, Okla., went back in office as vice chairman in charge of the section devoted to refinery engineering.

Earl Oliver, appraisal engineer of Ponca City, Okla., who has served in the past as chairman of the stabilization committee, continues in that position.

W. H. GEIS

F. C. BARCLAY of Longview has been appointed manager of the East Texas Independent Petroleum Association, body formed last March by operators and royalty owners in the East Texas field primarily to resist a cut in marginal-well production. An office will be established in Longview.

IKE W. TAYLOR is president and Jacob E. Taylor is secretary of the Taylor Drilling Company, organized last week as an Illinois corporation. Headquarters will be maintained at 123 N. Walnut street, Centralia.

H. B. FUQUA, district chief geologist for Gulf Oil Corporation, Fort Worth, and president of the American Association of Petroleum Geologists, was guest speaker at the February 7 meeting of the West Texas Geological Society at Midland. Membership of the association has had a substantial gain the past year, according to Fuqua, and is now above the 1929 peak level. He stated that advance reservations point to a big attendance at the annual meeting in New Orleans March 16-17.

MARVIN INGRAM, office manager for the Allison-Fitzwilliam Oil Corporation, is recovering from injuries suffered a month ago when testing for oil north of Sedgwick, Kansas, brought a premature explosion of dynamite.

L. E. WORKMAN, Urbana, of the Illinois Geological Survey staff, presented a paper on "Sub-Surface Stratigraphy of Cypress to Ste. Genevieve Formations in the Illinois Basin" at a meeting attended by 70 mid-western geologists participat-

ing in or studying development of the Illinois basin area held in Mattoon last week. Formal discussions of the paper were presented by J. R. McGehee, of Centralia; Carl B. Anderson, of Mattoon, and Robert G. Kurtz, of Marshall. Presiding at the meeting was Dr. Verner Jones, of Mattoon.

Among guests at the Meeting were Dr. M. M. Leighton, of Urbana, chief of the Illinois Geological Survey; Dr. A. H. Bell, of Urbana, head of the oil and gas division of the Illinois Geological Survey; Dr. George V. Cohee, of Urbana, member of the Illinois Geological Survey staff; Prof. F. W. DeWolf, of Urbana, chairman of the geology department of the University of Illinois; Prof. Ralph Esarey, of Bloomington, Indiana, state geologist and chairman of the department of geology at the University of Indiana; Clyde A. Malott, of Bloomington, professor of geology at the University of Indiana, and A. H. Sutton and H. R. Wanless, of Urbana, both professors of geology at the University of Illinois.

IVAN OSTOT, L. EDWARDS AND W. E. FOLETT have organized Novad Oil Company as an Illinois corporation. Headquarters will be maintained at 401 N. Silver St., Olney.

JOHN D. DAVIS, Illinois representative of Benedum-Trees Oil Company, was a business visitor in Flora, Ilinois, last week.

LEE MULVIHILL, of the Illinois-Indiana Petroleum Association headquarters at Robinson, Illinois, has returned from an extended trip through mid-western oil fields.

R. C. BOWLES, chief geologist for Standard Oil Company of Kansas, has recently been made a member of the board of directors and vice president of the company.

DR. J. BRIAN EBY, consulting geologist of Houston, recently addressed the geology students at Tulane University, New Orleans. His address was the first of a series of lectures to be made by geologists to the geology class.

C. A. CHISHOLM, chief scout of Pure Oil Company, Houston, last week made a business trip to Corpus Christi, Texas.

G. M. RICHARDSON, independent operator of Fort Worth, Texas, was a recent Houston visitor.

A. M. BLOW, vice president of Amerada Petroleum Corporation, Tulsa, last week stopped in Houston enroute to New Orleans. The company recently opened a new Louisiana gulf coast field at Raceland, Lafourche Parish.

C. M. RADER, district manager for Kobe Pump Company at Oklahoma City, spoke on "The Proposed Method of Sand-Packing of Oil Wells," before a meeting of the Oklahoma City Geological Society last week.

DR. B. B. WEATHERBY, president of the Geophysical Research Corporation, has been named to the Tulsa library board. He replaces William Fleetwood, whose oil activities keep him out of the city much of the time and make it impossible for him to serve longer on the board.

International Exposition Appoints Housing Manager

Charles Andrews (left), member of the Housing Committee and associated with the 1936 Exposition, has recently been appointed as manager of the Housing Bureau for the tenth International Petroleum Exposition, and will have charge of housing the out-of-town guests of the May 14 to 21 oil show. Earl Sneed, trustee of Sneed Royalty Company and chairman of the Housing Committee, (right) is explaining the housing situation to Andrews. Sneed points out that all the major hotels have been filled with reservations for the show period, and that arrangements have been made to have a Pullman city, which is to have air-conditioned cars and shower baths.

OSCAR R. SHAFFER, scout for The Texas Company, is confined to his home at Sapulpa, Oklahoma, following a breakdown two weeks ago.

PAUL BARRETT, personnel director of Ohio Oil Company, has returned to Findlay headquarters of the company after an inspection trip of the company's properties in New Mexico, Texas, Oklahoma, Kansas, Missouri, Kentucky and Illinois which he began on January 1.

JOE CURRY, former Kansas independent operator who recently moved to Pittsburgh, is in a critical condition in a hospital there as a result of an automobile crash. He suffered a fractured skull. Mrs. Curry, who was with him at the time of the accident, has recovered.

WILLIAM G. JOHNSTON, Houston and Oklahoma City operator, has been named a director of Sunray Oil Corporation.

DIED:

ARTHUR W. DUSTON, 52, geologist credited with discovery of the Mason oil field of northwestern Loving County, West Texas, and with discoveries that resulted in opening the Seminole area in Oklahoma, died in Tulsa February 2. He was president of Commonwealth Royalties Company and had been associated with the old Empire Oil & Gas Company, Pierce Oil Corporation and the old Independent Oil & Gas Company. Prior to the World War, he engaged in consulting geological practice in Alberta, Canada. Surviving are his widow and two sons.

DONALD B. MEGAHAN, 44, oil operator and lease broker of Robinson, Illinois, was killed February 2 when his automobile crashed into a bridge abutment on a sharp curve in the highway near Oblong, Illinois. He had formerly been active in Oklahoma and Texas fields. Surviving is his widow.

GEORGE H. BRADLEY, pioneer oil operator well known in the Eastern Fields region, died February 5 at his home in Bolivar, New York, at the age of 73. His first employment in the industry was as a teamster on an oil lease, and at the time of his death he was treasurer of the Bradley Producing Company and of the Empire Gas & Fuel Company.

JOHN E. GOLDEN, 73, retired president of Tide Water Pipe Company, Ltd., died February 4 at Bradford, Pennsylvania, following an illness of more than a year. He had been superintendent in charge of pipeline construction and in 1923 became president of the company, succeeding his brother, A. W. Golden.

ROY R. WIGHT, 33, petroleum engineer for The Texas Company, died February 4 at his Fort Worth residence from gunshot wounds. His health had been impaired lately. Earlier in the week he had received a promotion that involved the removal of his family to Wink, Texas.

SAMUEL J. MEALS, 82, second oldest oil driller in point of service in the United States, and inventor of various tools used in oil fields, died February 9, at his home in Wichita Falls, Texas. Meals was a nephew of Colonel Drake, owner of the first oil well in the world.

ASSOCIATION ACTIVITIES

A.I.M.E. annual meeting takes place this week

Completion February 8 of the revised program for the one-hundred-forty-eighth annual meeting of the American Institute of Mining and Metallurgical Engineers in New York February 14-18, inclusive, brought about a number of changes from the previously announced program.

While the program embraces all phases of mining and metallurgy for numerous industries, the part devoted to the petroleum section of the institute's general meeting is as follows:

February 14

Morning: Registration 10 to 12 o'clock; meeting of section and division delegates; 10 a.m. Aerial Geologizing, with the following papers scheduled: "Determination of Equipment, Capital, and Operating Costs of Airplanes for Mining and Oil Companies," by E. E. Aldrin, consulting aeronautical engineer, Standard Oil Company of New Jersey; "Use of Aerial Photographs in Geologic Mapping," by Wayne Loel, consulting geologist and engineer; "The Zeiss Wide Angle Survey Camera," by S. Meyer, vice president, Carl Zeiss, Incorporated, and "The Telechrome Color Photograph Air Survey Camera," by E. W. Albrecht, consulting geodetic engineer and geographer.

Afternoon: All-institute meeting on mineral economics at which Harold G. Moulton, president of the Brookings Institution, will speak on "Interrelations of Technology, Economics and Government in a Balanced and Progressing Economy," and Leo Wolman, professor of economics at Columbia University, will speak on "Labor and Capital."

February 15

Morning: General session of the Petroleum Division, M. Albertson, Shell Petroleum Corporation, chairman; George B. Corless, Humble Oil & Refining Company, Houston, vice chairman. Papers: "Abnormal Pressures and Pressure Variations with Depth of Petroleum Reservoirs," author unannounced; "Rational Development of Tempino Oil Field," by the production staff of De Bataffsche Petroleum Maatschappij, The Hague; "World Consumption of Petroleum and Its Products," by V. R. Garfias and R. V. Whetsel, Cities Service Company, New York, and "Consumption of Petroleum for Military Purposes," by Garfias and J. W. Ristori, Cities Service Company.

Afternoon: Joint session with Mineral Industry Education Division, Committee on Geophysical Methods of Exploration, and Committee on Mining Geology; Round Table on Geophysical Education. The Round Table on Geophysical Education, C. A. Heiland, chairman; W. B. Plank, G. M. Fowler, and M. Albertson, vice chairman. Papers: "The Trend in Geophysics," by Sherwin F. Kelly, chairman of the institute's committee on Geophysical Methods of Exploration; "The Status of Geophysics in a Department of Geology," by M. King Hubbert, instructor in geophysics, Columbia University; "Organization of a Department of Geophysics," by C. A. Heiland, professor of geophysics, Colorado School of Mines; "Teaching Geophysics in the Department of Physics," by David A. Keys, professor of physics, McGill University, and "Geophysical Education and Exploratory Geophysics as a Career," by Donald C. Barton of Houston, consulting and research geologist and geophysicist, Humble Oil & Refining Company.

February 16

Morning Session, 9:30 a.m. Domestic Production Symposium, Basil B. Zavoico, Chase National Bank, Houston, chairman; J. Terry Duce, The Texas Company, New York, vice chairman. Papers: "Arkansas and North Louisiana," by H. K. Shearer, geologist, the Hunter Company, Inc., and W. B. Weeks, Phillips Petroleum Company; "California," by V. H. Wilhelm, chief petroleum engineer, The Texas Company; "Colorado," by C. E. Shoenfelt, geologist, Petroleum Information, Inc.; "Illinois," by Alfred H. Bell, geologist and head of the oil and gas division, Illinois Geological Survey; "Indiana," by M. M. Fidlar, state gas supervisor; "Kansas," by W. A. ver Wiebe, University of Wichita, and E. G. Dahlgren, director of the conservation division of the state; "Kentucky," by Coleman D. Hunter, geologist, Kentucky-West Virginia Gas Company, and Iley Browning and Nicolas W. Shiarella, geologists and operators; "South Louisiana," by Benjamin C. Craft, professor of petroleum engineering, Louisiana State University, Baton Rouge; "Michigan," by Theron Wasson, chief geologist, The Pure Oil Company; "Mississippi," by Henry N. Toler, state oil and gas supervisor; "Missouri," by Frank C. Greene, geologist, Missouri Geological Survey; "Montana," by Eugene S. Perry, chief geologist, Montana Bureau of Mines and Geology; "New Mexico," by E. H. Wells, state geologist, and A. Andreas, geologist, New Mexico Bureau of Mines and Mineral Resources; "New York," by D. H. Newland, state geologist; "Ohio," by Dewitt T. Ring, geologist, Ohio Fuel Gas Company; "Oklahoma," by H. E. Rorschach, consulting engineer; "North and Central Pennsylvania," by Arthur C. Simmons, consulting geologist and petroleum engineer; "South Pennsylvania," by John T. Galey, operator; "Tennessee," by Kendall E. Born, assistant geologist, state division of geology; "Central Texas," by Joseph Dawson, geologist, Gulf Oil Corporation; "East Texas," by Wallace Ralston, geologist, Sun Oil Company; "Texas Gulf Coast," by W. V. Vietti, manager Texas Petroleum Company in Colombia, and E. P. Hayes, petroleum engineer, The Texas Company; "North Texas," by H. B. Fuqua, chief geologist, and B. E. Thompson, Gulf Oil Corporation; "North Central Texas," by H. W. Imholz, consulting geologist; "Texas Panhandle," by Henry Rogatz, consulting geologist; "Southwest Texas," by M. T. Halbouty, chief geologist and petroleum engineer, Merit Oil Company, Houston; "West Texas," by P. P. Gregory, chairman, Yates Pool Engineering Committee, B. B. Zavoico, and J. H. Crump, geologist and assistant petroleum engineer, Chase National Bank; "West Virginia," by David B. Reger, consulting geologist, and "Wyoming," by E. W. Krampert, consulting engineer.

Afternoon, 2:00 p.m. Foreign Production Symposium: J. Terry Duce, The Texas Company, chairman (Mr. Duce is in South America); and Garfias and Zavoico, vice chairmen. Papers: "Australia," by W. G. Woolnough, Australian commonwealth geological adviser; "Russia," by Basil B. Zavoico; "Venezuela," author not announced; "Iran," by Anglo-Iranian Oil Company; "Mexico," by V. R. Garfias and R. V. Whetsel; "Iraq," by Ben B. Cox, Socony Vacuum Oil Company, New York; "Colombia," by O. C. Wheeler, chief geologist, International Petroleum Company, Ltd., Toronto, Ont.; "Argentina," by Mario L. Villa, Yacimientos Petroliferos Fiscales, Buenos Aires; "Dutch East Indies," by B. H. van der Linden, N.V. de Bataafsche Petroleum Maatschappij; "India," by the Geological Survey of India; "Bahrein Island," by J. O. Nomland, assistant chief geologist, Standard Oil Company of California, San Francisco; "Canada," by the Geological Survey of Canada; "France," by H. de Cizancourt, Compagnie Francaise des Petroles; "Germany," by Walter Kauenhowen, Deutsche Vacuum Oel, A.G.; "Peru," by Oliver B. Hopkins, chief geologist, Imperial Oil, Ltd.; "Poland," by Charles Bohdanowicz, professor of economic geology, Warsaw; "Trinidad," by Trinidad Department of Mines; "Burma," by L. Dudley Stamp, London School of Economics and Political Science; and "England," by D'Arcy Exploration Company.

February 17

Morning Session, 9:30 a. m. Economics: Sydney A. Swensrud, chairman; Joseph E. Pogue, vice chairman. Papers: "What Are the Uneconomic Uses of Petroleum?" by John Gill and E. T. Knight, Atlantic Refining Company; "An Equilibrium Theory of Proration," by Joseph E. Pogue, vice president, Chase National Bank, New York; "The Market for Oil Securities from 1932 to 1937," by Norman D. Fitzgerald, department of petroleum economics, Chase National Bank; "Administrative Problems in Co-operative Stabilization of Economic Domains," by Alexander Sachs, economist, Lehman Corporation.

Meeting date for eastern district session changed

Dates for the spring meeting of the Eastern District of the American Petroleum Institute's Division of Production have been advanced to April 14 and 15 from April 28 and 29, it has been announced by F. E. Eckert, district chairman. The change was necessitated by conflict in hotel arrangements.

Sessions will be held in the William Penn Hotel at Pittsburgh, Pennsylvania, and those who already have made reservations are being advised to confirm them for the new meeting dates. The program shortly will be announced.

Legislation

[*Continued from page 13*]

public domain, and such lands as contained oil to be made part of the naval reserves.

While the extent of the California off-shore oil fields has never been accurately determined, it is said their value runs into many millions of dollars. The state now is in control of the lands, from which it receives a large annual revenue.

In introducing the resolution, Senator Nye pointed out that the oil reserves now owned by the government are in serious danger of depletion or loss from various causes, while large deposits underlie various submerged lands along the coast and below low-water mark but within a distance of three miles, and held that these lands belong to the government, which has ownership of lands below the low-water mark and within the three-mile limit.

The measure was favorably reported to the Senate a week after its introduction by the Senate Public Lands Committee, which approved the resolution as a "better approach to the problem" than through the bill which the Senator introduced in April.

Pennsylvania investigators

A "roving, snooping commission" was the characterization given Pennsylvania's oil industry investigating commission during a hearing in Dauphin county court at Harrisburg last week at which the state body unsuccessfully attempted to gain dissolution of a temporary injunction halting its operations obtained by Petrol Corporation, of Philadelphia. The injunction, which halts the commission's activities, was continued and no date set for a formal hearing on the attempt to permanently halt the investigation.

The court order obtained by Petrol company brought indefinite postponement of a series of hearings, which were to have opened in Philadelphia February 1 and for which more than 200 executives of pipe line and oil companies had been subpoenaed.

While refusing to dissolve the temporary injunction, the three-judge court refused to permit George W. Scudder, Glenside printer, to intervene as a taxpayer to halt spending a $50,000 fund appropriated by the legislature for the inquiry. The commission was created by the 1937 legislature to study the necessity for state-wide regulation of the petroleum industry. It was given authority to engage legal and economic experts and given the power to subpoena records and individuals.

Protesting the injunction, William W. Litke, Bellefone, commission counsel, maintained that the state group was a special commission created by the legislature and one over which the Dauphin county court was without jurisdiction.

Connally act scandal hits at Secretary Ickes

A suppressed scandal occurring in the early days of Connally contraband oil act enforcement this week threatened to become a storm center for Secretary of the Interior Harold L. Ickes.

Incidentally brought to light some days ago during hearings of the Senate Public Lands Committee considering the appointment of Robert K. Burlew, assistant to the secretary, as First Assistant Secretary of the Interior, enemies of Secretary Ickes led by Senator Pittman, expressed their determination to press the matter to a thorough investigation.

Information made public by the committee showed that two examiners of the Federal Tender Board, assigned to "hot oil" investigations in the East Texas field, became involved with a company whose head later pleaded guilty to violation of the Connally Act.

It was charged by Senator Pittman, on the basis of reports to him, that the men acquired a one-third interest in the firm. They were suspended after an investigation by the Interior Department's division of investigation revealed that they had made "loans" to an alleged hot-oil operator.

The two employes, it was said, later filed counter charges against the Glavis investigators and denied the partnership. Secretary Ickes, the committee was told, appointed a departmental committee to investigate the entire matter and, the report of that committee being in conflict with the findings of the original investigators, later called in Jonathan G. Latimer, Chicago attorney and friend, to study all reports and give legal advice as to the action which should be taken.

Latimer's report according to Secretary Ickes, exonerated the suspended employes of criminal conspiracy, but held improper their action in acquiring an interest in property over which they had investigative jurisdiction.

The two employes, it was developed by the senator, finally were separated from the service in June, 1936, because of "expiration of funds." No other action was taken against them.

The hearings of the committee, now running for several weeks, have been replete with charges of impropriety against Burlew, Louis R. Glavis, former head of the division of investigation, and Secretary Ickes, including allegations that a $105,000 shortage in funds of the department cafeteria had occurred and that wire-tapping had been resorted to extensively by the Glavis investigators.

Intensive inquiry into conditions in the department was undertaken largely as a result of a recent scandal, in which a low-salaried employe handling Civilian Conservation Corps vouchers was accused of having embezzled some $75,000 over a period of many months before his defalcations were discovered.

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Madison suit reverberates against Jackson nomination

Oil made slippery the path of Robert H. Jackson, nominated as solicitor general, before the Senate Judiciary Committee which is considering his nomination.

Appearing before a subcommittee for questioning Jackson was interrogated at length by Senator Austin (Rep. Vt.) as to his conduct of the recent prosecution at Madison, Wis.

The senator introduced into the record a letter written in 1934 by Secretary Ickes as petroleum administrator to C. E. Arnott of the industry's NRA board in which he suggested attempts be made through cooperative action to stabilize the price level of the industry.

The letter was one of the documents to which the government objected as exhibits at the Madison trial.

Questioned by members of the subcommittee, Jackson defended the practice of the Department of Justice of casting about for the most friendly court in which to bring its prosecutions, but held he had nothing to do person-

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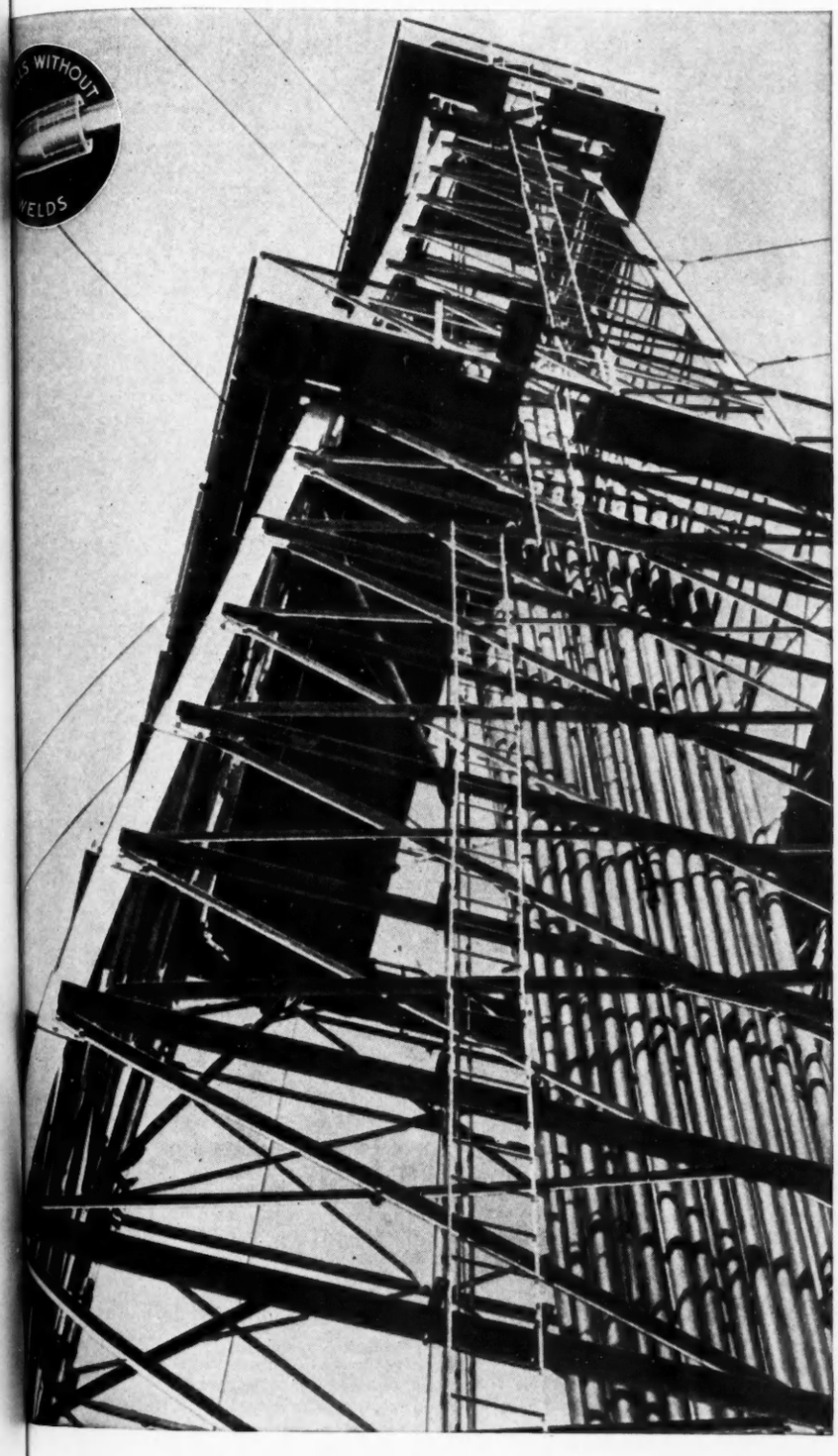

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4. "Washouts practically eliminated"
Every joint of NATIONAL Seamless Drill Pipe is thoroughly sound and uniform; offers no focal point for a washout to start.

5. "Greater economy per foot of hole"
Because it gives reliable drilling service and resists progressive fatigue, NATIONAL Seamless Drill Pipe is used over and over, substantially reducing cost per thousand feet of hole.

Year by year, operators are going deeper in search of oil sands. In 1933, a 10,000 foot well was front page news. Now, holes go down well over two miles through strata once considered virtually impenetrable.

Much credit is due to drillers who perform feats like these. They take every possible precaution to avoid costly delays and difficulties. In the selection of their working equipment, they exercise the utmost care.

Much credit is also due to improved drill pipe. Where the drilling goes the smoothest you'll find NATIONAL A.P.I. Seamless Drill Pipe on the job. It is a product of the world's largest manufacturer of tubular products.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

ally with the selection of jurisdiction for the oil case.

"Do you favor conducting these cases in such way as to give the courts the impression they ought to do what the government in Washington wants," Senator Austin asked.

"We go to them and tell them what we want. But it is the function of the judiciary to decide," Jackson replied.

Trust suit motions to be heard March 24

Federal Judge Patrick T. Stone announced that arguments on motions filed by counsel for 16 major oil companies and 30 executives will open in Madison, Wisconsin, on March 24. The motions filed immediately after a jury of Wisconsin farmers and small town business men returned a verdict of guilty to charges of conspiring to raise and fix gasoline prices through operations of buying programs in East Texas and the Mid-Continent, seek a new trial, to have the verdict set aside, or an arrest of judgment.

Seek trust damages against Columbia

Ben Williamson, Jr., trustee of Inland Gas Corporation and Kentucky Fuel Gas Corporation, was ordered by Federal Judge H. Church Ford, at Lexington, Kentucky, last week to file suit against Columbia Gas & Electric Corporation for treble damages as the result of alleged violation of the federal anti-trust laws by Columbia corporation. Attorneys said the suit would involve "millions of dollars."

Judge Church ordered employment of Arthur G. Logan, Delaware, as special counsel to prosecute the suit on behalf of the Inland Gas and Kentucky Fuel Gas companies. His compensation is to be fixed by the Eastern Kentucky District United States Court on termination of the action.

Proration

[*Continued from page 11*]

ders allowing owners to make up loss suffered through commission orders, it will be a case of "every man for himself." The sudden withdrawal from the reservoir of so much oil would have a serious effect on the future of the field.

No temporary restraining order was issued February 9 when the application was filed. Both federal district judges, A. P. Murrah and Edgar S. Vaught, were out of the city. Three federal judges will try the case, one of them to be a member of the circuit court of appeals.

Texas ups allowables

The Texas Railroad Commission last week issued orders increasing allowables for three Southwest Texas fields to meet "a firm demand for an additional amount of Texas oil to meet foreign contracts to prevent the cancellation of certain future cargoes, which would make necessary the substitution of oil from South America."

Saxet Frio in Nueces County was increased 1586 barrels to 21,694 barrels daily. Placedo in Victoria County was increased 1092 barrels to 10,982 barrels. The Benavides field in Duval County was raised 4263 barrels to 9763 barrels per day.

All three of the new orders became effective on February 10.

The Texas Railroad Commission has issued an order effective February 1, increasing the allowable for the Howard Glasscock field from 14,523 barrels to 16,945 barrels. Cosden Oil Company asked for the increase in order to obtain a sufficient supply of crude for its Big Spring plant.

The Texas Railroad Commission issued an order, effective February 1, raising the allowable for the Duggan field, Cochran County, from 180 to 400 barrels daily.

The Texas Railroad Commission has called a hearing on the new Fairbanks field in Harris County, to be held in Austin on February 21. Stanolind Oil & Gas Company requested that the hearing be set in order to present evidence on which to base rules for operating in the area.

Fifteen-acre spacing for wells in the Turkey Creek field, Nueces County, was requested at a hearing before the Texas Railroad Commission last week. This plan was opposed by land and royalty owners who urged the commission to allow 10-acre spacing. Phillips presented testimony to the effect that this oil, which is producing from the Douglas sand found at about 5800 feet, is separated by a fault from the Deep Saxet field located nearby.

Turkey Creek is producing 35.2 gravity oil, while Deep Saxet is producing 63 gravity distillate. Turkey Creek has a sand topped at 5798 feet with a 6-foot gas cap. Phillips estimated that the sand has a 30 percent porosity and is highly permeable.

1938 Results

[*Continued from page 15*]

rels more to another new peak of 86,484,000 barrels.

It is customary for the gasoline inventories to reach the high point of the year around the end of March. Consequently, after having set a new record in late January this year, the stocks had two full months in which to increase further.

It appears, therefore, that they may rise well above 90,000,000 barrels before the cessation of further additions.

And that possibility obviously represents a definite threat to the stability of the gasoline market for this year.

At the 86,484,000 barrel level of February 5, the gasoline stocks were 22.6 percent higher than on the comparable date last year. In contrast, the demand for gasoline lately has been running only about 10 percent higher than a year ago. And for February the Bureau of Mines estimated that motor fuel demand would be only about 3 percent larger than in February last year.

The gasoline market naturally is relatively weak, in view of the unfavorable inventory situation. But prices, at refineries and service stations, have been holding largely unchanged since the beginning of the year, following the substantial declines in the final three months of the past year.

Crude Control Strict

This better situation in the gasoline market lately has arisen, apparently, largely in consequence of the exceptionally strict control of crude oil production; as the strict crude control represents a favorable factor partially offsetting the unfavorable gasoline storage situation.

For some months the production of crude oil has been held down strictly, and the control has been exceptionally tight since the beginning of this year. For February the allowables in the leading producing states are, in the aggregate, materially under the forecast of market demand as made by the Bureau of Mines.

Employing the shut-downs of the fields of the state on Sundays, Texas is well under the Bureau of Mines estimate of market demand, and Oklahoma also is holding production below the bureau suggestion. California, Kansas, and New Mexico adopted the bureau recommendations, and Louisiana slightly exceeded its quota in fixing a state allowable for February.

Crude Oil Stocks

Crude oil stocks have been on a downward trend since last September. They were reduced about 6,500,000 barrels in the final three months of 1937, having come down by January 1, 1938, to 303,468,000 barrels.

Since the beginning of the year, the crude stocks have shown a slight increase, having gone back up to 304,286,000 barrels, as of January 29, a gain of 818,000 barrels in the month. At the latter level, the crude stocks were 6.6 percent larger than one year previously. That increase for the year has not been out of line with the gain that has occurred meanwhile in petroleum demand. The total demand for United States petroleum has been running nearly 10 percent higher than a year ago. And the Bureau of Mines has estimated that the supply of domestic crude oil that will be needed to meet the demand will be 7 percent higher in February, 1938, than in February, 1937.

Drilling Down Seasonally

Drilling in the United States has shown some contraction in the opening portion of 1938, but the decrease has been largely seasonal. In January well completions averaged 65.6 per day. That compared with 76.3 completions per day in the previous month. But it is normal for January drilling to be smaller than that of December. The 65.6 completions per day in January, 1938, were, however, also slightly fewer than the 66.1 per day in January, 1937.

This fractionally smaller drilling activity in January this year than in that month last year was not surprising, in view of the general business decline and the recent fears in the oil industry regarding the safety of existing crude oil prices. Drastic curtailment of production recently in most of the leading producing states also probably has tended to hold down drilling.

Continues More Stable

Control efforts have reduced runs of crude oil to storage but accumulations of gasoline and fuel oil is disturbing element

THE oil industry's markets lately have assumed a greater degree of stability, in response to special efforts to hold down crude oil production and refinery output.

The gasoline market recently has been showing surprising steadiness, prices having held mostly unchanged, at refineries and service stations, since the beginning of this year.

This recent stability of the gasoline market is in contrast with the conditions in the closing three months of 1937, when prices at the refineries underwent a practically uninterrupted decline, and when service station prices showed some loss of ground in sympathy.

Plants Quit Operating

The better showing of the gasoline market lately has reflected, apparently, the fact that numerous refineries have been closed down temporarily, because of unprofitable product prices; while some of the less efficient plants have been dismantled, passing out of the picture. The dismantling has occurred in East Texas and other sections of the Mid-Continent.

In any event, gasoline offerings from Mid-Continent refineries have been lighter within the past two weeks, with current production better balanced with contract and local demand.

Kerosene and Fuel

The markets for the other refined products also have been steady lately. Kerosene prices have continued firm, and inventories have remained satisfactory. Moreover, increased demand for kerosene is to be expected within several weeks, with the commencement of spring farming activity.

The demand for heavier fuel oils, for industrial use, has continued comparatively light, under the influence of slow general business. But prices have remained mostly unchanged.

The lighter fuel oils, used in domestic and commercial heating, have been in better demand. But relatively mild weather this winter has prevented as heavy consumption as was generally expected. Nevertheless, the light fuels are closely held, and prices have been holding at the established levels.

Crude Control Strict

The exceptionally strict control of crude oil production now prevailing in the leading producing states undoubtedly is having a stabilizing effect on the industry's refined oil markets as well as on the crude price structure.

The crude postings have continued to hold, despite the fears that have been held lately for their safety.

The leading producing states currently are enforcing state allowables generally in accordance with or under the Bureau of Mines estimates of market demand; and consequently, crude oil stocks are being held about stationary.

The crude oil inventories showed an increase of about 800,000 barrels from January 1 to January 29, indicating fair success in balancing output with demand. However, a part of the crude oil used in January was not in actual demand, having gone into the making of additional surplus gasoline.

This fact justifies the special efforts lately toward further curtailing crude oil production. Even stricter crude production control has been needed for completely eliminating excesses on the industry's markets as a whole.

Statistics Mixed

The statistics of the industry in recent weeks have been partially favorable and partially unfavorable. They have reflected the unusually strict curtailment of crude oil production and an accompanying cutting down of refinery operations. Similarly, they have indicated satisfactory reactions of crude oil stocks. But the statistics also have revealed the excessive gasoline inventories. They also have indicated that fuel oil stocks, through steady expansion, have reached proportions so large as to threaten the prevailing prices.

Production and Runs

Crude oil production of 3,316,450 barrels daily in the week ended February 5 was only 2.9 percent larger than in the corresponding week of last

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 5, 1938	3,316,450	3,155,000	.....	*86,484,000	118,619,000
February 6, 1937	3,220,750	2,980,000	†285,384,000	70,535,000	101,136,000
Change in past year	+2.9%	+5.9%	+6.6%	+22.6%	+17.2%

* All time peak. † Stocks January 30, 1937.

year. That new level was satisfactory, as petroleum demand has been showing a somewhat larger gain than this over a year ago.

Refinery runs in the week ended February 5, averaging 3,155,000 barrels daily, were 5.9 percent above the level of a year previously.

Inventory Situation

Crude oil stocks on January 29 stood at 304,286,000 barrels, or 6.6 percent higher than a year before.

Gasoline storage again reached a new all-time peak in the week ended February 5, rising to 86,484,000 barrels, which was 22.6 percent higher than on the corresponding date a year before. The demand for gasoline, meanwhile, is running less than 10 percent above last year's levels.

Fuel oil stocks rose in the week of February 5 to 118,619,000 barrels, and at that point were 17.2 percent larger than on the corresponding date last year.

Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below 4 to 4¼ cents a gallon; 63 to 66 octane, 4⅜ to 4½ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; and 70 to 72 octane, 4⅞ to 5¼ cents.

Corresponding prices in the Chicago market were as follows: 3¾ to 4 cents, 4 to 4⅜ cents, 4½ to 4⅝ cents, and 4½ to 5 cents.

In East Texas the most common gasoline, 60-62 400 end-point, was priced generally at 4 to 4⅛ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4½ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅝ cents for the 43-44 water white grade. Corresponding prices in the Chicago market were 4⅛ to 4⅜ cents and 4¼ to 4⅝ cents.

Fuel oil prices were mostly unchanged. In the Chicago market range oil was priced from 4⅛ to 4¼ cents a gallon. The No. 1 white oil was priced from 4⅛ to 4⅜ cents, and the No. 1 straw from 3⅞ to 4⅛ cents. No. 2 straw was 3⅝ to 3⅞ cents and No. 2 dark from 3½ to 3¾ cents. No. 3 oil was 3½ to 3¾ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 77½ to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 52½ to 60 cents a barrel.

Summary of Wells Completed in the United States Week Ending February 12, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	....	....	....	....	.....	....	.....
Arkansas	3	2	....	1	1,600	29	4
California	25	20	....	5	13,240	154	142
Colorado	....	....	....	....	.....	2	2
Florida	....	....	....	....	.....	....	.....
Illinois	3	2	....	1	575	94	.....
Indiana	6	1	....	5	37	12	23
Kansas	31	26	....	5	20,297	267	251
Kentucky	10	5	3	2	135	89	39
Louisiana	18	9	....	9	4,497	155	64
Michigan	21	12	1	8	4,176	108	108
Mississippi	....	....	....	....	.....	2	5
Montana	1	1	....	....	200	6	16
Nebraska	....	....	....	....	.....	....	.....
New Mexico	13	9	....	4	7,854	67	78
New York	4	....	4	....	.....	10	.....
Ohio	21	7	8	6	159	137	232
Oklahoma	41	31	4	6	5,843	294	373
Pennsylvania	4	....	4	....	.....	31	7
Texas	227	181	3	43	306,113	1,616	1,634
Utah	....	....	....	....	.....	....	.....
West Virginia	22	4	15	3	19	130	88
Wyoming	2	1	1	....	80	10	12
Total this week	452	311	43	98	364,825	3,213	3,078
Total last week	463	311	47	105	364,093	....	.....
Total this year	3,213	2,149	319	745	2,599,098	....	.....

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 58 of the issue of February 7. This schedule will appear only in the first issue of each month.

Canada oil production nearing Empire lead

Solution of the crude marketing problem which is currently holding production in the Turner Valley field of Alberta, Canada, to 42 percent of potential appears to be the only obstacle to making the field the major crude oil producing unit in the British Empire, an examination of production figures for 1937 reveals.

Trinidad, the largest oil producing unit in the British Empire, produced 15,155,000 barrels last year, while British India, the second largest producing area, yielded 9,805,000 barrels. Recent acidization of several Turner Valley crude producers and a January completion has brought the field's potential to 29,917 barrels daily, or considerably over 10,000,000 barrels a year.

Just what Turner Valley production for 1938 will be, however, cannot be estimated with any degree of accuracy at this time. The Dominion tariff board is conducting an inquiry into the Canadian oil situation, with special attention being given to Turner Valley production, which Alberta operators hope will result in reduced freight rates that will make it possible to market crude over a wider area in competition with that now being imported.

Comparison of Permits Granted for New Wells

STATE	Week Ending Feb. 12	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	6	14	35	8	240
California	30	30	155	158	1,584
Louisiana	31	77	164	104	1,227
Kansas	42	66	229	253	2,663
Michigan	4	8	63	104	958
Oklahoma	45	78	253	294	2,711
Texas	309	615	1,693	1,894	17,238
Total	467	888	2,592	2,815	26,621

Production Unchanged

Drop in Oklahoma output in line with new proration order offsets slight gains in other important producing states; Texas up slightly.

UNITED STATES crude oil production remained stationary for the second consecutive week, when it averaged 3,320,050 barrels daily, exceeding the previous week by only 875 barrels and stayed under the Bureau of Mines recommendation by 118,750 barrels.

The latest event brightening the proration picture, was the emergency order of the Oklahoma State Corporation Commission fixing the allowable for that state at 500,000 barrels daily, which is 35,000 barrels less than the allowable set on February 1. Consequently the output for Oklahoma dropped considerably, offsetting gains in Texas, California and Louisiana. Kansas, as the other principal producing state, showed only a slight decrease.

Oklahoma last week averaged 511,125 barrels daily, showing a decrease of 21,975 barrels, which was 58,575 barrels less than the Bureau of Mines estimate, but 11,125 barrels above the allowable prescribed by the state.

Texas had a gain of 3900 barrels, averaging 1,231,400 barrels daily, which was 134,300 barrels less than the Bureau of Mines recommendation and 173,840 barrels less than the state allowable.

California showed an increase of 12,400 barrels, the daily output having been 738,500 barrels, which was 44,800 barrels more than the federal allocation and the recommendation of the Central Committee of California Oil Producers.

Louisiana output was up 250 barrels at 254,900 daily, exceeding the indicated demand 15,500 barrels and the state allowable 10,200.

Kansas showed a decrease of 650 barrels, having averaged 179,300 barrels daily. That was 2900 barrels more than the Bureau of Mines recommendation and the state allowable.

United States Crude Oil Production
Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Feb.)	States Allowable in February	BARRELS DAILY FOR WEEK ENDING	
			February 12	February 5
TEXAS—				
Texas Panhandle			60,200	71,900
North Texas			63,100	62,500
West Central Texas			30,300	30,800
West Texas			177,500	173,000
East Central Texas			90,400	78,000
East Texas Field			424,800	423,800
South Texas			204,700	207,000
Texas Gulf Coast			180,400	180,500
Total Texas	1,365,700	1,405,240	1,231,400	1,227,500
CALIFORNIA—				
Long Beach			58,500	58,000
Santa Fe Springs			41,500	41,000
Huntington Beach			35,500	36,500
Dominguez			29,000	31,000
Inglewood			15,500	15,500
Ventura Avenue			35,500	35,500
Seal Beach			9,500	7,500
Midway-Sunset			80,000	77,000
Elwood			7,700	7,600
Kettleman Hills			81,000	80,000
Mountain View			14,000	14,000
Playa del Rey			7,200	7,500
Wilmington			90,500	85,000
Others			233,100	230,000
Total California	693,700	*693,700	738,500	726,100
OKLAHOMA—				
Oklahoma City			100,000	114,025
Seminole Area			103,500	103,100
Crescent			7,500	7,975
Lucien			11,500	12,900
Fitts			64,175	69,850
Edmond			9,900	8,250
Moore			7,100	7,475
Others			207,450	209,525
Total Oklahoma	569,700	†500,000	511,125	533,100
LOUISIANA—				
North Louisiana			78,600	80,650
South Louisiana			176,300	174,000
Total Louisiana	239,400	244,700	254,900	254,650
KANSAS—				
Ritz-Canton			6,600	5,200
Chase			5,725	6,650
Hollow-Nikkel			3,500	2,450
Sedgwick			4,025	3,925
Burrton-Haven			11,275	12,225
Lorraine			2,300	2,450
Russell County			28,800	32,575
Silica—West			15,425	13,600
Silica—South			2,650	2,750
Others			99,000	98,125
Total Kansas	176,400	176,400	179,300	179,950
NEW MEXICO	105,100	105,100	106,000	105,050
MICHIGAN	52,800		49,400	49,000
ARKANSAS	36,800		47,125	41,525
MOUNTAIN STATES—				
Wyoming	51,800		47,100	50,100
Montana	12,400		14,800	13,500
Colorado	4,400		4,200	4,400
Total Rocky Mountain States	68,800		66,100	68,000
EASTERN STATES—				
Pennsylvania Grade			77,500	77,600
Southern Illinois (New Pools)			26,100	25,400
Illinois-Indiana (Old Pools)			10,200	9,600
Others, Eastern			22,400	21,700
Total Eastern States	130,000		136,200	134,300
Total United States	3,438,800		3,320,050	3,319,175

* Recommendation of Central Committee of California Oil Producers.
† Temporary emergency order issued by State Corporation Commission, February 9.

Oil firm goes in for hydrogenation

Hayama Oil Company has decided to establish a 1,500,000-yen subsidiary under the style of the Japan Oil Chemical Industrial Company. The new company will specialize in the production of high-octane gasoline, lubricating oil and heavy oil from tar by high-temperature hydrogenation. The plant will be equipped for a capacity of 20,000 metric tons in the first year and will be gradually expanded to produce 150,000 tons at the end of five years, the Nippon Kogyo reports.

Kerosene oil found in Suleman Mountains

Kerosene oil has been found in the Suleman Mountains, near Fort Munro, according to recent press reports from Multan. The Punjab government has been informed of the discovery, and Burmah Oil Company has sent an expert by airplane to examine the oil on the spot.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Canadian Probers Discuss Montana Crude Prices

The Montana crude oil price structure, which was blamed for a recent cut in the price of crude of the Turner Valley field of Alberta, was discussed before the Canadian tariff board last week during its investigation of the Canadian oil industry. Purchase by Canadian refineries of 3000 barrels of Montana oil a day, one witness testified, would stabilize that market and react to the benefit of Alberta producers. The Montana crude situation has been critical since Canadian buyers withdrew from that market early this winter in favor of Alberta crude.

Testimony on reduction of Turner Valley crude oil prices was given by F. Cottle, chief accountant for Alberta Board of Public Utilities Commissioners, who expressed an opinion that advantages to Alberta producers that would follow stabilization of the Montana situation might offset the loss of a market for 3000 barrels daily. The Turner Valley field, with a potential of almost 30,000 barrels daily, is choked to 42 percent, a situation which precipitated the tariff board inquiry.

It would be more profitable for the British American Oil Company, Ltd., to open its Coutts, Alberta, refinery and use Montana crude to refine gasoline for Southern Saskatchewan and Alberta than to keep on supplying that territory from Calgary and Moose Jaw refineries using Turner Valley crude, F. A. Gaby, vice president of the company, told the board. The British American official said he was told that Montana crude could be bought for between 85 and 90 cents a barrel. "On the 90-cent basis, we could process up to 300,000 barrels at Coutts at a lesser cost than we can deliver in the southern section gasoline refined from Turner Valley crude," he declared.

The possibility of shipping Turner Valley crude into the mid-west United States market, suggested by R. T. Graham, counsel for the province of Saskatchewan, who declared a reduction of import duties might be sought, received little attention when George Sedgewick, board chairman, declared that door was closed.

Matters being considered by the tariff board are advisability of continuing the present policy of prorating production, methods of gathering and transporting crude from wells to refineries by pipe line and railway, freight rates, distribution, area economically available to Turner Valley operators and customs duties on crude petroleum.

W. S. Campbell, president of the Petroleum Producers' Association and instrumental in obtaining the inquiry, told the board that proration in Canada is an outstandingly different matter from that in the United States as Canada produces little of its own domestic needs while United States production is greater than home requirements. He declared that Canadian marketers should have made provision for Turner Valley's expanding production when they saw that development of the field was underway, and added that Canadian oil should not be stored in the ground while outside supplies are imported. Independent companies, he said, have difficulty in financing their operations publicly because of proration, charging that if development by independents is restricted, control would gradually pass to one or two large companies and result in higher prices for petroleum products. He contended that freight rates at some intermediate points are now higher than far more westerly points and that the levies should be changed so that they gradually increase on eastward shipments.

Dr. George S. Hume, director of the Canadian geological survey who spent four months recently studying the south end of Turner Valley, told the board that a great many faults apparent on the surface of the field did not touch its limestone deposits where oil is found.

S. F. Shaw, petroleum engineer of San Antonio, Texas, testifying for the Producers' Association told the board that a general percentage quota production allotted to the whole field rather than individual proration of wells would be better for the economical exploitation of the field. He estimated that 40 percent of the oil in the field could be recovered, and explained that permeability, porosity and well spacing were factors that made his estimate of recovery low. He said that recovery estimates ranged from 90 percent to 25 percent, and that the 40 percent figure for the entire field was conservative. He suggested that where the porosity of the limestone was high, crude could be withdrawn rapidly if the 42 percent potential production were given the entire field rather than individual wells.

Dr. George Brown, professor of petroleum engineering at Michigan State University, told the board that Turner Valley crude would be worth 20 to 22 cents a barrel more than Mid-Continent crude shipped to Imperial Oil Company, Ltd.'s refinery at Sarnia, Ontario. He said that from 12,000 to 14,000 barrels of crude daily would supply Western Canada's needs, and for that reason steps should be taken to replace Mid-Continent crude in Eastern Canada.

R. V. LeSueur, vice president of the Imperial Company, defended prices paid by his company for Turner Valley crude, declaring that the present price was comparable to and based on a price of $1 a barrel for Montana crude, although it could be bought for 75 cents there. He told that board that cooperation seemed impossible in Montana and that although half of the state wells were shut in, there were 1,158,000 barrels in storage which were a potential threat to the whole market. He said that gasoline made from Turner Valley crude was sold as far east as Winnipeg and that the company hopes to extend distribution to Rainy River. Points farther east, however, could be more economically served from the Sarnia refinery using crude from the Mid-Continent fields at $1.49 a barrel.

The Imperial Company president said there was no doubt that the 42 percent allowable would be increased as soon as the market could absorb more. He estimated that between 16,000 and 17,000 barrels of crude a day would supply the gasoline requirements of the prairie provinces and that a good crop and natural growth in population might bring an increase to 20,000 barrels in a few years.

Hon. N. E. Tanner, Alberta minister of lands and mines, told the board that the Alberta government was negotiating with the Dominion government for an amendment to the natural resources agreement to give the Province the right to pass legislation designed to conserve gas resources in the field. He said that the value of crude oil produced in November, 1937, was "little above the value of the gas used to produce it," and explained that since discovery of crude on the west flank in 1936, gas conservation in the upper part of the formation, now being used "for an absurdly low oil recovery," had be-

come more important. He declared that in addition to ultimate recovery for industrial and domestic purposes, the gas had greatly enhanced value as a lift in production of crude oil, for holding back the crude from migrating into the gas zone where it may be lost and for retarding any possible water flooding of the west flank.

A number of companies producing crude oil in Turner Valley have agreed to a levy of 2½ percent of their production to compensate owners of naphtha wells should they be closed, Tanner said, and the Provincial government is now seeking authority to enforce such an agreement.

Russians making gasoline from lignite

The first experimental unit for the manufacture of gasoline from lignite in the U.S.S.R. has been completed in Kharkov. The unit has now been put on a trial run and the first gasoline has been produced. The technological process has been worked out by the Kharkov Coal-Chemical Institute.

The unit put into operation in Kharkov is of great importance as a prototype of future large-scale plants for the distillation of gasoline from coal, Professor N. M. Karavayev, one of the greatest Soviet authorities on the hydrogenation of coal, has stated. According to the professor, these refineries will be built in the first place in regions where solid fuels are found, such as eastern Siberia and the Far East, and will thus open up new prospects for the economic development of these regions.

The Kharkov Coal-Chemical Institute has successfully adapted the Bergins method for Ukranian lignites, said Professor Karavayev. This method has already been tested on a large industrial scale in Germany (Leuna-Weike) and in Great Britain (Imperial Chemical Industry). In the U.S.S.R. work on the hydrogenation of coal has been carried on since 1931 and the putting into operation of the Kharkov experimental plant demonstrates the success of the Soviet chemical industry. The Technological method worked out in Kharkov can be used, according to the professor, both for lignites and coal.

High-octane gasoline from natural gas

Production of motor spirit of high-octane number is being projected by the Omonogawa refinery of the Japan Mining Company. The plant, erected at the Omonogawa oil field in 1937, is capable of treating 3,000,000 cubic feet of natural gas a day. The gasoline obtained has a density of 72-75 degrees Baume and an octane rating of 95 without addition of anti-knock agents, it is claimed. Poor as Japan's oil and natural gas resources are, they are valuable from the military viewpoint inasmuch as they lend themselves to the production of fuels of ultra-high octane rating. Octane numbers of 90 and more have been obtained from local crudes by a process credited to the Aeronautical Research Institute of Japan and are extensively used in Navy planes. However, an octane rating of 95 is without precedence.

Alberta wildcat finds geology checking right

Green Valley Petroleums, Ltd.'s Banner 1, Legal Subdivision 6, Section 34, Township 17, 3-w5, wildcat test on the Highwood-Sinclair structure currently diverting considerable Alberta oil interest from the Turner Valley field, was drilling 110 feet in the Madison lime, or below 5470 feet, as the week closed. Weather conditions made it inadvisable to run the 6-inch and drilling was continuing meanwhile in the lime. C. W. Dingman, government geologist, reports that the Fernie-Madison contact was made at 5360 feet, after which 70 feet of buff dense lime was drilled followed by 20 feet of fine crystalline lime with very fine porosity. Striking similarity between conditions encountered at the wildcat and those encountered in Turner Valley give strength to hopes that the well will open a new field. The structure is 3 miles wide, running 20 miles from north to south. The test was started in 1914, but was stopped at 200 feet when the war halted all exploration and development in Alberta fields. Work was resumed in 1926, but the well was only carried to 600 feet at that time.

Abandonment of Brown Oil Corporation, Ltd.'s 3, Legal Subdivision 1, Section 19, Township 18, 2-w5, ended for the present, hope of obtaining production several miles north of the prolific south Turner Valley pool on the west flank. The test was drilled to 6760 feet, 440 feet in the Madison which was believed to be the bottom of the black lime. No production was obtained at that depth and the well was plugged back 90 feet toward the middle of the producing horizon where a 5000-gallon acid treatment was given without success. A subsequent shot of nitroglycerine failed to improve matters and arrangements are being made to pull casing. The well is the fourth since completion of Turner Valley Royalties, Ltd.'s original crude producer in June, 1936, that failed to find commercial production. While failure of Brown 3 will not condemn acreage north of present producers for future drilling, it will tend to concentrate activity to the south and west of the present hot spot. The dry hole is in a section adjoining one in which many naphtha wells were drilled 10 years ago. It is a half mile south of Advance Oil Company, Ltd.'s 5A, one of the field's smaller producers, having a potential of 182 barrels daily.

Brown Oil Corporation increased the potentials of its Nos. 1 and 2 by 630 barrels, or 22 percent, by acidization, it was indicated when potential tests were completed last week. No. 1 was boosted from 1597 to 1849 barrels, and No. 2 from 628 to 1006 barrels.

Following a 5-day test, the potential at West Flank Oil Company, Ltd.'s 2, on the line between Legal Subdivisions 1 and 8, Section 32, Township 18, 2-w5, Turner Valley's most recent completion, was set at 666 barrels a day after acidization. Officials of the company refused to give production figures before treatment. The company's Nos. 1 and 3 had been completed previously and are producing under potentials of 320 and 312 barrels daily, respectively. Derrick is up for No. 4 and cellars are dug for Nos. 5 and 6. Locations of all 6 are on an 80-acre tract comprising Legal Subdivisions 1 and 8.

Four Turner Valley wells are in the Madison limestone, with Richland Oils, Ltd.'s 2, Legal Subdivision 5, Section 28, Township 18, 2-w5, nearest completion. Large quantities of oil were blown high into the derrick last week as cable tools were withdrawn. The bit broke through the hard band that had been slowing operations and is now believed to be in the lower producing horizon. It was at 6835 feet, 425 feet in the lime, with completion expected in about 25 feet. The separator is in position and storage has been erected. The well is in the midst of large crude producers.

A fishing job at Spy Hill Royalties, Ltd.'s 1, being drilled by Anglo-Canadian Development & Holding Company, Ltd., on Legal Subdivision 16, Section 20, Township 18, 2-w5, was successfully completed and the well was making new hole below 6870 feet, or 267 feet in the Madison. The other two lime wells were Royalite Oil Company, Ltd.'s Nos. 28 and 29. The deepest, No. 29, Legal Subdivision 7, Section 27, Township 20, 3-w5, was drilling at 6470 feet, about 195 feet in the Madison, while No. 28, Legal Subdivision 16, Section 32, Township 18, 2-w5, was drilling about 70 feet in the Madison, or a total depth of 6500, after setting casing to 6440 feet.

Inter-City Royalties 1 was spudded in on Legal Subdivision 11, Section 20, Township 18, 2-w5, and was drilling at 180 feet as the week closed. Offsetting the Brown 3 failure, it leaves Turner Valley drilling tests at 32.

The rotary rig from the Brown 3 was moved over to Legal Subdivision 7, Section 20, Township 18, 2-w5, where it will be used on Sunset Oils, Ltd.'s No. 2. The location is on 40 acres adjoining the company's No. 1 to the south which has a potential of 1721 barrels daily following acid treatment.

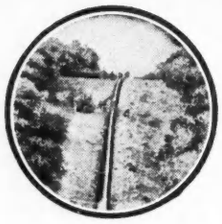
Turner Valley's southern pathfinder, Davies Petroleums, Ltd.'s 3, spudded in two weeks ago on Legal Subdivision 7, Section 33, Township 17, 2-w5, was drilling below 500 feet, making fair progress with standard equipment. It is two miles south of any other Turner Valley well and 3½ miles south of present production.

On the Birch Ridge structure, 26 miles west of Calgary, Elbow Oil Company, Ltd.'s 1, Legal Subdivision 11, Section 35, Township 22, 5-w5, drilled out a cement plug in the Brown sands, potentially productive horizon, at 5314 feet and was preparing to deepen a few feet. The Brown sands have proven productive in some Turner Valley tests and the wildcat is considered the most important foothills test under way. Started in 1926, it is financed largely by English capital.

Ranchmen's Gas & Oil Company, Ltd.'s wildcat testing the High River-Aldersyde structure, about one mile north of Aldersyde, is to be drilled to completion by Anglo-Canadian Development & Holding Company, Ltd. Standing idle at 7230 feet for almost a year, recent tests by J. G. Spratt, government engineer, indicate the well is on top of the Dalhousie sands and should reach the lime in about another 110 feet.

Blackfoot Ribstone Oils, Ltd., holding 1320 acres in the Ribstone field, will start its No. 1 on the southeast quarter of Section 28, Township 43, 2-w4, about 2 miles north of Ribstone station.

PIPE LINE NEWS



Complete new outlet for Buckeye field

Construction work on the 35-mile, 6-inch pipe line connecting the Buckeye field of Gladwin County, Michigan, to Bay City where a new refinery is under construction has been completed, according to James C. Graves, vice president of the Bay Pipeline Corporation. Gathering lines in the field are being laid and that work is to be completed before the end of the month.

The refinery and the pipe line, being constructed at a total cost of $500,000, are designed to provide an outlet for at least part of the production of the Gordon Oil Company, the Turner Petroleum Company and the Kirkham-Graves interests, owning 75 producing wells in the field. The refinery, scheduled for completion early in March, will have a normal capacity of 3000 barrels of crude daily, but under pressure will be able to handle 4000 barrels daily. Operation of the pipe line will start before completion of the refinery as storage facilities are to be completed earlier.

To start 25-mile South Dakota gas line

Construction of a 25-mile natural gas pipe line from Vermillion, South Dakota, to Yankton, South Dakota, is to be started just as soon as the frost is out of the ground this spring. It is part of a project assured last week with acquisition of the Yankton Gas Company, now distributing manufactured gas, by the Sioux City Gas & Electric Company. The change over is to cost approximately $120,000, and gas from Texas fields will be supplied through the facilities of the Northern Natural Gas Company.

Gulf buying route from Oklahoma to Ohio

Buyers of the Gulf Pipe Line Company are proceeding with a right-of-way purchase program along a route paralleling the company's line running from Jenks, Oklahoma, to Ohio. Right-of-way is being procured gradually so that the company may proceed with an expansion project when ready. It was said, however, that no construction work was contemplated for the immediate future.

Purchase of right-of-way was begun three months ago on the Ohio end of the line and buyers are now working in Greene County, Missouri. The company's system was constructed in 1932, and the 10-inch line had a capacity of 32,000 barrels a day with pumping stations located 55 miles apart. Loops with 10-inch in 1936 increased the line's capacity to 42,500 barrels.

Cotton Valley line

Construction is ready to start on a 4-inch line from the Cotton Valley field, Webster Parish, by Standard Pipeline Company, to its Weller Tank Farm, 10 miles to the eight. Right-of-way has been secured.

New East Texas pipe line is completed

Movement of East Texas crude through a new pipe line outlet to the Gulf Coast began early last week through the completion of Bell General Transit Corporation's 20-mile 8-inch stub line, extending from Tyler to Bullard station, where connection was made with Pure Transportation Company's Van-Smiths Bluff 10-inch carrier.

Bell General Transit Corporation was formed late last year by a group of independents and Pure Oil Company to acquire McMurrey Pipe Line Company's 8-inch line, which linked the Overton section of the East Texas field with a refinery at Tyler. The short extension line was then built to permit direct movement of oil to the coast. Pure Oil Company is expected to absorb most of the crude handled by the new concern, which has posted a tariff of 5 cents per barrel from Overton to Bullard, and a joint tariff of 12½ cents per barrel for oil transported from Overton to Smith Bluff.

Vacuum field to get pipe line

Pipe line connection for the Vacuum field, which is slated to be one of the most active drilling centers in Lea County, New Mexico, this year, will be provided immediately by The Texas New Mexico Pipe Line Company. Sixteen miles of 8-inch line will be built south from an 80,000-barrel tank, located in northwest corner 25-17s-34e, now handling all oil produced to the North Lynch pool. At the latter point connection will be made temporarily with a four-inch line that gravitates oil to Lynch station, 34-20s-34e. This four-inch unit will later be replaced with eight-inch. Due to difference in surface elevation, the eight completed wells and seven drilling tests in the Vacuum area can be served by a gravity system and the oil moved to Lynch station in the same manner.

Line laid to new Michigan gas well

The Michigan public utilities commission last week granted permission to J. M. Pierce and Paul S. Hughes, operators of the Clareco Gas Company of Clare and Mt. Pleasant, to construct a 3½-mile 2-inch pipe line connecting their Murphy 1 gas well with the 4-inch transmission system of the Gas Corporation of Michigan. Gas from the well will aid the Gas Corporation, which several months ago was given permission to borrow 100,000,000 cubic feet of gas to alleviate a gas famine in Mt. Pleasant from the Consumers Power Company.

Gas explosion brings suit from government

The Montana-Dakota Utilities Company and the Montana-Dakota Power Company are made defendants in a $14,023.37 damage action filed by the United States of America as a result of a natural gas explosion which caused considerable damage to the postoffice at Glendive, Montana, February 12, 1936.

The complaint, filed in federal district court at Great Falls, Montana, charges negligence on the part of the defendants for permitting natural gas to leak from the gas mains. The gas accumulated in the postoffice and exploded, causing damage which allegedly virtually wrecked the building.

Suit filed alleges misuse of gas odorant

Charging use of an odorant in natural gas on which he holds the patent, Arthur Ervin Saner, of Butte, Montana, has filed an action against the Great Falls Gas Company seeking an injunction to restrain the company from further use of the odorizing agent, an accounting, and damages of not less than $100,000 to be based upon the figures revealed by the accounting.

The complaint, filed in federal court at Great Falls, Montana, declares that Saner first thought of adding an odorizing agent to warn householders of a gas leak, having the process patented on June 29, 1921. It charges that the Great Falls company has been odorizing gas in its mains since February 1, 1932, ignoring his rights as patentee of the process.

Mandan seeks to repeal gas franchise

Alleged omission of a reservation that a certain portion of North Dakota natural gas will be used by the company when and if it is made available is the basis of action being taken by the Mandan city commission to revoke a 25-year franchise granted January 11, 1937, to the Montana-Dakota Utilities Commission. An ordinance to repeal the franchise has been given first reading by the commission.

Mayor C. G. Byerly explained that behind the move is the refusal of the utilities company to grant the city industrial rates on gas for its filtration plant. If the franchise is repealed, the company will automatically operate under an old ordinance granting a franchise to 1951.

CALIFORNIA FIELDS

Bottomed at 13,154 feet and going deeper to...?

Los Angeles.—The world record depth well, Continental Oil Company's Kern County Land Co. A-2, in the Wasco area of Kern County, had reached 13,154 feet morning of February 11 and was coring. Last core was hard shale, similar to formation that has been cored since 12,615 feet. The company is seeking the oil sand picked up by Union Oil Company's Kernco test which proved a new field, and this sand may be had in the next 300 feet. It now requires 9 hours for a round trip.

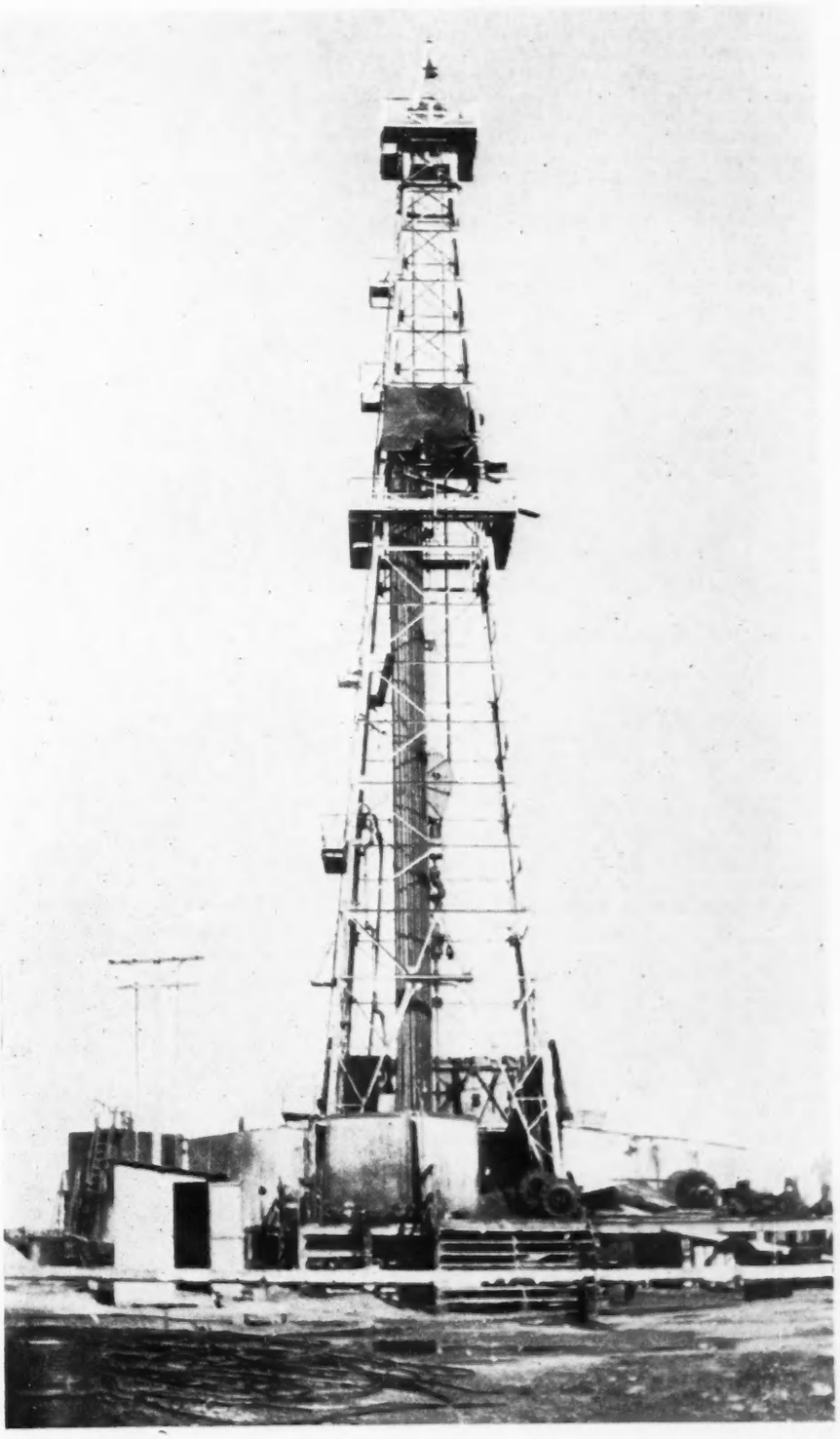
The casing record in this hole includes 497 feet of 16-inch, 5512 feet of 10¾-inch and 11.570 feet of 7-inch. The hole had just one fishing job, which was not important, and otherwise has encountered practically no trouble. If no mechanical troubles develop, the hole will be drilled deeper until the oil sand is found, or until it is felt there is no chance for production. Equipment is not out of the ordinary, and there has been nothing of the unusual in drilling the well.

Barnsdall Oil Company has completed its second producer in the new Newhall field in Los Angeles County, with initial production of 1660 barrels of 33 gravity oil, cutting 3 percent. It was then choked back to 885 barrels of clean oil. It is producing 800,000 cubic feet of gas, with pressure of 175 pounds on the tubing and 750 pounds on the casing.

The company has made location for a third well to be located one location west from No. 2, the exact location being 340 feet north and 660 feet east from SWc Section 26-4-17.

At Kettleman Hills, two very interesting tests are under way. Kettleman North Dome Association's No. 4-18J, last bottomed at 10,810 feet, is swabbing for a production test, but real results are not expected for several days. This is an edge test, and means much for the future of the North Dome. Superior Oil Company's Huffman 5, an old producer drilled deeper, has been redrilled to 10,746 feet and is about ready for a swabbing test, in an effort to secure production from the oil sand uncovered by No. 4-18J.

In the Long Beach Harbor area of the Wilmington field large wells are being completed, exceeding 5000 barrels initial, in the so-called Terminal zone. The companies drilling are passing up the Ranger zone, upper production sand, and after the Terminal zone has been developed, the producers will be plugged back to the Ranger sand, which is being protected by cementing off. The Terminal zone is restricted as to area, due to a fault that crosses



the new field extension, but the Ranger formation is of a greater extent.

There is considerable new activity in a portion of the very old Torrance field. Chanslor Canfield Midway Oil Company's Torrance 33 and 34 found a new producing zone below 5000 feet, and some 150 feet of coarse oil sand has been found. Some 25 projects are under way, many being new wells and others calling for redrilling and deepening of old wells.

Union Oil Company's Bell 100, deep test at Santa Fe Springs, with bottom at 11,314 feet, is standing, pending decision as to what will be done next. String of 3½-inch casing was cemented at 11,215 feet, and the last 90 feet of hole was tested in various ways over a period of several weeks. Cores of this 90 feet looked favorable and for a time it had been believed a producer could be completed, but it is now understood that chance of production is slim. The well is located in the proven area, and there is a chance another hole will be drilled.

Hartman 18 being drilled on the extreme north flank of the Ventura Avenue field by Tide Water Associated Oil Company, with bottom at 10,090 feet, is standing cemented with 6⅝-inch landed at 9400 feet.

Tulsa. — Continental Oil Company and others started operation of a new gasoline plant in the Billings pool of Noble County last week. The new unit has a capacity of 9,000,000 cubic feet of gas daily. Located on Phillips Petroleum Company and Shell Petroleum Corporation's McCaughtry lease in NEc 21-23n-2w, near the center of the field, it will take gas from all wells in the field. It also has a compressor unit for gas lift.

CALIFORNIA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
KETTLEMAN HILLS—		
Kettleman No. Dome, 38-12P	900	8080
BELRIDGE—		
Belridge Oil Co., 27-61	260	8750
ELK HILLS—		
Richfield, Crampton 1-D-A	50	3035
FRUITVALE—		
Western Gulf, K.C.L. B-32	460	3034
MOUNTAIN VIEW—		
Hogan Pet. Co., C. C. M. O. Symons 5	325	6180
ROUND MOUNTAIN—		
Tampico Pet. Co., B&G K-5	300	1847
SANTA MARIA VALLEY—		
Calif. Lands, Jones-Gallison 2	450	5325
De Laine Pet. Corp., De Laine 3	975	4456
Edco Oil Corp., No. 1	860	4391
E. H. Moore, G-1	480	5007
Pacific Western, Samarin 2	1930	5012
Union, Bettiga 2	145	2615
FRESNO COUNTY—		
Western Gulf, S. P. L. 4	*	6754
Union, Nicholson 1	*	7062
KERN COUNTY—		
Golden Bear Oil Co., Siemon 3	*	1503
Dr. M. Pottinger, Girard 1	*	1040
MERCED COUNTY—		
Amerada, Carano 1	*	8385
DOMINGUEZ—		
Shell, Reyes 18	75	4244
EL SEGUNDO—		
Richfield, Howard 1	15	7643
Standard, Refinery 7	490	7330
Wilshire Oil Co., Elsie 2-1	330	7250
Security 2	315	7205
LONG BEACH—		
Texas Co., Bauman 5	185	4730
WILMINGTON—		
General Pet. Corp., S. P. 2	4455	4146
Union Pacific Ry., Offset 75	240	3140

*Failures; †Junked; ‡Million cu. ft. gas.

Two new pools, four miles apart, in Okfuskee County.

* * *

Three offsets to Ramsey discovery near objective sand.

Tulsa.—Things were looking up in Oklahoma last week, as two new pools were opened, both in Okfuskee County and only four miles apart. In Payne County, the three offsets to the discovery well, Ramsey pool, were nearing Wilcox sand. In other parts of the state, activity was generally quiet.

First of the new pools is near the town of Okfuskee and was opened by Mid-Continent Petroleum Corporation's Irelan 1, SW NE SW 10-13n-10e. During the first 24-hour test the well pumped and flowed 107 barrels of oil from Wilcox sand between 3420 and 3427 feet before being shut in for pipe line connections. The pool is 2½ miles south of the East Tuskegee pool of Creek County.

Wood Brothers' Lehmer 1, NW SW NW 21-13n-10e, three miles southwest of Okfuskee, after topping Dutcher sand at 2851 feet, drilled to 2854 feet where it made gas estimated at 50,000 cubic feet and filled 1800 feet with oil in 16 hours. The well flowed while bailer was being run. Operators were building tanks and were to run 6-inch casing. Gravity of the oil was about 33

Another few days should see at least two of the three offsets drilling in the Ramsey pool of Payne County setting pipe in second Wilcox sand, producing formation of the pool. Mid-Continent Petroleum Corporation et al's Brandon 1, SEc NE 13-18n-1e, west offset to the discovery well, was drilling below 4325 feet, and Columbia 1, NWc SW 18-18n-2e, south offset, was drilling at the same depth. Southwest offset, Wetzel 1, NEc SE 13-18n-1e, was drilling below 3445 feet.

Phillips Petroleum Company's Becker 1, NE NW SW 8-5n-10e, wildcat southwest of Calvin in Hughes County, was drilling at 6288 feet in sand, topped at 6255 feet. The formation has remained hard with no show.

Southern Oil Company's Henry 1, NWc NE 10-8s-7e, 50 miles south of the Fitts pool and in Bryan County, has uncovered geology said to conform with that found at Fitts. When last reported, it was drilling below 3200 feet. At 2840 feet, the well was drilling in hard shale. A generalized section of Fitts shows that pool has about 400 feet of Pennsylvania Caney shale beginning at around 2500 feet.

Ardmore Sector

Drilling activity in Southern Oklahoma continued to center around the Cement pool of Caddo County and the lime area of Carter County. Ray Stephens' Funk 2, SWc SE SE 1-5n-9w, in the Cement field, at 5287 feet, was reported to have made 600 barrels of oil during the last 12 hours tested. Tankage was being erected.

In the Fox field, Carter County, Gulf Oil Corporation succeeded in killing the flow at Smith Estate 1, C SW SW 26-2s-3w, and was reconditioning mud preparatory to deepening.

Other tests in the area were getting started. Gulf Oil Corporation and Carter Oil Company's Lester 1, C NW NW 35-2s-3w, was drilling below 1665 feet in shale; Gulf Oil Corporation's Garrett 8, C NW SW 27-2s-3w, was moving in rotary tools; Johnson 2, C SE NE 27-2s-3w, finished cementing cellar and McClure 2, C SE NE 28-2s-3w, had completed rigging up.

Farthest southeast test in the area, Carter Oil Company's Feagin 1, C NW SW 36-2s-3w, was drilling a water well and cellar and pits were completed. Carter-Harley 1, C NW NW 19-2s-3w, was drilling at 6600 feet in Viola lime.

Reports that Indian Territory Illuminating Oil Company and Foster Petroleum Corporation were to drill ahead at Drumm 1, C N½ SW SW 32-2s-17w, in the Frederick area of Tillman County, were denied last week. The companies announced the well had been ordered

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abandoned. It was at 3843 feet with salt water in the hole.

Another try for production on the Namaha ridge was started last week by Carter Oil Company at Lydick 1, C E½ NW NE 23-15n-4w, three miles southwest of Navina in Logan County, an on a direct line between the Edmond and Crescent pools. It was building rig.

South of the Seward pool, Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Blunt 1 B, C W½ W½ NW 26-15n-3w, was shut down for orders at 6495 feet in second Wilcox sand. A test there revealed water. Top of the first sand was at 6340 feet and the second member was topped at 6444 feet.

New test for the Lamont pool of Grant County is Carter Oil Company's Crisman 2, C E½ NW NW 16-25n-3w, north offset to Crisman 1, discovery well of the pool. It was completed last September at 5410 feet in Wilcox sand.

In the Edmond district of Oklahoma County, W. O. Allen et al's Jackson 1, C E½ SE NW 6-14n-3w, was shut down to repair boiler at 5695 feet. It had top of the Checkerboard lime at 5265 feet.

Northeast of Norman in Cleveland County, Harper & Turner's Sears 1, C W½ NW NW 13-9n-2w, was drilling by the fish at 6650 feet. A whipstock was set at 6672 feet to get by a bad fishing job.

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO COUNTY—		
Ohio Oil Co., Lemon Acct No. 2, sw se se 2-5n-9w	¶28.9	4500
COAL COUNTY—		
Carter, Claytor 1, cw½ ne sw 27-2n-9e (pb 6480)	163	6722
CREEK COUNTY—		
Big Pet. Co., Young 1, se ne ne 24-19n-7e	55	2656
HUGHES COUNTY—		
J. W. Nicks et al, E. Cox, ne ne nw 21-9n-9e	*	1648
Power Oil, Cox 2, sw nw ne 21-9n-9e	¶2.5	490
KAY COUNTY—		
Shaffer et al, Hauschild 2, s½ se nw 8-28n-1w (pb 3496)	40	3536
KIOWA COUNTY—		
E. A. De Bolt, S. A. Burnett 1, nw se ne 30-7n-20w (pb 880) (otd 983)	*	1242
LINCOLN COUNTY—		
Wilcox, Sac & Foz 8, ne nw sw 15-14n-6e	378	3043
LOGAN COUNTY—		
Ohio Oil Co., Knight 1, se ne sw 12-17n-1w	¶42.5	5055
MUSKOGEE COUNTY—		
F. Wagester, Dodson 1, ce½ se sw se 6-14n-19e	*	840
OKFUSKEE COUNTY—		
Evens et al, Good n 3, se nw nw 36-10n-8e	43	1744
Wells, Clark 1-B, se nw nw 11-10n-11e	*	2130
OKMULGEE COUNTY—		
Young, Hart 2, se ne sw 5-15n-14e	20	818
Royal et al, Thomas 8, sw sw ne ne 29-15n-14e	20	1679
Tiffing, Fish 4, nw se se 25-16s-11e	2	2240
Adkins, Clayton 2-A, cel ne ne 36-16s-11e	8	1762
OKLAHOMA COUNTY—		
Santa Fe Oil Co., Slaughter 1, se sw sw 15-12n-3w	1323	6529
Stahl Pet. Co., Miller 1, se nw sw 15-12n-3w	950	6520
OSAGE COUNTY—		
E. A. Babcock No. 2 2-A, c se ne 14-22n-10e	*	1530
Midco Oil Corp., 7, sw sw nw sw 17-22n-10e	14	1912
Lewis Prod. Co., 6, se nw sw 27-24n-7e	297	2669
Phillips Pet. Co., 19, ne se se 14-25n-11e	*	1859
PONTOTOC COUNTY—		
Noble Drlg. Co., G. Thompson 1, n½ sw sw nw 1-1n-7e	455	4217
Harper & Turner, Williams & Moore 1, nw nw sw 20-2n-4e	2	246
Patsy, Meharg 1, ne sw se sw 21-2n-6e	109	3502
Blackstock, Steed 1, se ne ne 35-2n-6e (pb 4350)	45	4480
Sinclair Prairie, McCarty 4, nw nw ne 22-2n-7e (pb 3991)	10	4029
Wooley 23, sw sw sw 22-2n-7e (pb 2625) (pb 2616)	125	2700
Moore, Harper 3-A, cs½ ne sw ne 29-2n-7e (pb 4210)	37	4323
Schauers 12, se ne nw 29-2n-7e (pb 2800)	10	3749
Blackstock, Hardin 4-A, sw se se nw 30-2n-7e (pb 2984)	190	3635
POTTAWATOMIE COUNTY—		
Magnolia, West 4, ne se ne 26-6n-4e	60	3436
Southwest Pet., Gunter 2, se nw sw 32-11n-4e	160	4484
SEMINOLE COUNTY—		
Vierson, Factor 2, nw se sw 25-5n-7e	100	2281
Sinclair Prairie, Tinnison 1, se se nw 22-6n-6e	¶8.1	2360
Commercial, Huddleston 2, sw sw ne 32-7n-6e	30	2979
Pure Oil, Reed 1, se ne se 14-8n-6e (otd 4323)	310	4348
Amerada, Tilghman 3, se ne nw 2-10n-5e	378	4653
Carter, Riddle 6, cn½ se 35-11n-6e	502	4050
STEPHENS COUNTY—		
Karl Kiester, Sid Jones 2, se se sw se 23-1s-5w (pb 437)	3	706
Adams & Prince, Frensley 1, nw sw se ne 35-1s-5w (pb 748)	4	1398

*Failures; †Junked; ¶Million cu. ft. gas.

Moore pool pressure decline retarded

Oklahoma City.—By lowering the rate of production in Moore pool of Cleveland County, engineers have succeeded in slowing the decline of reservoir energy and have also reduced the gas/oil ratio, according to a report by the conservation department here.

Average pressure for the reservoir as of February 1 was 888 pounds. The decline was only 68 pounds as compared with the drop of 78 pounds for January and 92 pounds as of December 1. The gas/oil ratio was 4278 feet of gas per barrel. Limit of the ratio is placed at 4000 feet of gas per barrel by the commission orders.

The potential as of January 1 was 247,088 barrels of oil, but was reduced to 242,477 barrels as of February 1. Most wells in the field continue having trouble with water, and operators have concluded they must take the water along with the oil, as plugging-off has done more harm than good.

West Texas gas/oil ratio control effective

Conservation of gas produced by flowing oil wells in West Texas has been the most effective in fields that have engineer committees, according to testimony given during the gas/oil ratio hearing conducted by the Railroad Commission, February 7. Evidence was slated to be presented on 17 fields to guide the commission in fixing gas ratios, but discussion was confined to fields in Ector, Ward, Winkler and Andrews Counties.

Reduction of the gas/oil ratio of 331 wells in the Goldsmith field, Ector County, from an average of 7200/1 to 2400/1 during the last half of 1937 drew favorable comment from Colonel E. O. Thompson, presiding commissioner. E. A. Wahlstrom, chairman of the Goldsmith field engineering committee, stated that the lower ratios were made possible by installation of tubing packers and liners. Cement squeeze jobs in the upper portion of the exposed hole also contributed to the reduced gas yield.

Due to the absence of water drive in the North Cowden field a gas/oil ratio of 2000/1 was recommended by R. W. Tesch, engineer of Stanolind Oil & Gas Company. He stated that formation packers used in 20 of the company's wells had lowered the average gas yield from about 5000/1 to 1200/1. Highest gas/oil ratios prevail in wells with the full pay section exposed to nitro shot. Revival of the engineering committee that formerly functioned in this field is to be made February 15.

Increase of the gas/oil ratio in South Ward County district from 5000/1 to 6000/1 was advocated by C. A. Martin, Jr., petroleum engineer for Standard Oil Company of Texas. Large shot holes prevent the curbing of the gas yield to the lower level. L. C. Harrison, independent producer in the area, opposed the higher ratio, and recommended the use of packers above the shot holes.

Midland Oil Man Discusses Russian Oil Industry

Progress in the oil industry of Russia has been noticeable, that was the impression of Ronald K. DeFord, who attended the Seventh International Geological Congress held in Moscow last year. DeFord, who is connected with the Argo Oil Corporation of Midland, Texas, made this statement before a group of about 100 geologists gathered at the Houston Geological Society's weekly meeting, February 10.

In further discussing operations in the Tertiary oil fields, he believes that generally the geological department of the Soviet Union has been functioning quite well, but that the producing division has much to accomplish. Drilling in Russia, he explained, is ordinarily done by rotary and heavy equipment is used, although steel derricks are not in use as yet. Much core and directional drilling is being undertaken successfully, but at present the use of bottom hole pressure has not been started. According to his statement, production in the Union ranges from 3500 to 6400 feet.

Mt. Pleasant plans exposition in July

With directors of the Michigan Oil & Gas Exposition adopting a biennial show policy, the Mt. Pleasant chamber of commerce is stepping in this year with a Michigan Petroleum Exposition to be held in the state's oil capitol July 26 to 31, inclusive. The event is planned around the theme, "Home, Transportation and Recreation," and is to be of interest to all persons directly or indirectly dependent on petroleum products for their livelihood as well as those directly connected with the industry.

C. L. Maguire, as general chairman of the executive committee in charge of the exposition, is assisted by A. H. Ledbetter and J. W. C. McKee. Members of the advisory committee are E. E. Freeman, president of the chamber; Howard D. Atha, Dr. E. C. Beck, H. G. Gover, W. Webb McCall, Bert Shangle and W. W. Russell.

KANSAS FIELDS

Two new pools opened in Rice and Russell Counties.

* * *

Barton County wildcat promises to open oil production.

Wichita. — Two new pools were opened in Kansas last week, one in Rice and the other in Russell County. Water encroachment temporarily halted tests at an Ellis County wildcat which may open a new producing area, and standard tools were being rigged to test a wildcat west of the Ainsworth pool of Barton County, showing for production from Siliceous lime. A closely followed well was testing, south of the Davidson pool, and the Padgett pool of Sumner County was extended south.

A production test was started at Price and Wamhoff et al's Gemeinhardt 1, NEc SE 12-18s-10w, two miles south of the Stumps-K.C. area of Rice County. The well opened a new pool, filling 3000 feet with oil in 30 hours from 3306 feet, in Siliceous lime topped at 3297 feet.

Second new pool of the week was three quarters of a mile south of the South Gurney pool of Russell County, where Coralena Oil Company's Michael 1, NW NE NW 2-15s-14w, was producing from Lansing lime through perforations in the casing. The pay was had from 2953 to 2973 feet, and following acidization with 5000 gallons, made a potential of 1367 barrels of oil.

Duwe, Farris and Colonial Oil Company's Hadley 1, SE NE SE 12-11s-18w, 3½ miles northwest of Bemis pool of Ellis County, which looks to be a pool opener, ran into trouble last week, showing 2500 feet of water and some free oil after drilling plugs at 3125 feet. Either a casing break or faulty cement job is blamed. It was swabbing down to survey for a water shut-off.

Barton County probably will gain another oil pool within the next few days as The Texas Company started rigging standard tools to drill in at Lowry 1, C NL NW SW 2-17s-13w, two miles southeast of the Ainsworth pool. Top of the Siliceous lime was at 3323 feet, where 7-inch casing is cemented. It was drilled to 3324 feet before casing was run. The test also reported a small showing of oil between 3092 and 3095 feet in Kansas City lime.

Southwest of the Davidson pool of Barton County, Sinclair Prairie Oil Company may be opening a new producing area at Oeser 1, NEc SE 17-16s-11w. The well filled 200 feet with oil per hour from Kansas City-Lansing lime between 3063 and 3065 feet, with 5-inch casing set at 3020 feet. It was preparing for a swabbing test. Even though the well was not making such a good showing, another well is to be drilled in the vicinity, location having been made for Frederick 1, SWc SE 16-16s-11w, three quarters of a mile southeast.

One half mile south extension of the Padgett pool of Sumner County was assured when E. B. Shawver et al's Pose 1, NE SW NE 34-34s-2e, began showing for production from Mississippi lime at 3450 feet. Top of the lime was at 3435 feet and casing was cemented at 3436 feet.

Two miles west of the Zenith pool, Stafford County, J. C. Shaffer et al's Newell 1, NEc SE 20-24s-11w, had top of the Siliceous lime at 4064 feet but reported no show and was shut down for orders.

Russell County's largest oil producer was completed last week at R. H. Shields' Letsch 4, NE SE SE 27-14s-13w, in the Giese pool which made 4543 barrels of oil in 24 hours from 2859 feet in Lansing lime. There are 19 wells in the pool having a combined potential of nearly 40,000 barrels.

Another extreme western Kansas wildcat probably will be abandoned soon. It is Phillips Petroleum Company's John Kees 1, C SE SE 3-19s-30w, southwest of Dighton in Lane County. The well went to 4763 feet in Mississippi lime for no show and was shut down for orders. Nearest production is 20 miles southwest in the Shallow Water pool of Scott County, which produce from the lime. Discovery well in the field found the formation from 4670 to 4686 feet.

Three quarters of a mile northwest of the Stoltenberg pool of Ellsworth County, Colonial Oil Company et al's Hagy 1, NWc SW 16-16s-10w, had a hole full oil in 48 hours, production coming from 3341 feet in Siliceous lime. It was waiting on cement after running casing to 3332 feet.

National Refining Company's Pray 1, SW NW SW 31-27s-3e, which extended the Andover South pool into Butler County two weeks ago, was completed for 204 barrels of oil from 3107 feet in Wilcox sand. Northeast of the discovery well, National will drill Fee 2, to go to Stalnaker sand for gas production.

An increase in production was noted for W. E. Witt et al's Fair 1, NW SE SE 4-22s-8w, wildcat south of Sterling in Rice County, which received a potential of 326 barrels of oil from the corrected depth of 3401 feet in Mississippi chat. It had previously been estimated good for about 30 barrels of oil per day.

Carter Oil Company's Andress 1, C NL SE 2-21s-13w, four miles north of the Gates pool in Stafford County, was preparing to drill plugs after cementing 4½-inch casing at 3535 feet. A drill-stem test with packer set at 3535 feet showed about 15 feet of mud. The Gates pool produces from Siliceous lime at around 3700 feet.

Wichita. — The Kansas Corporation Commission, through E. G. Dahlgren, conservation director, has announced three hearings for February 17, to be held in the Allis hotel here. At 9:00 a.m., adjustment of McCreslenn Oil Company allowables in the Ruder field of Ellis County will be considered; at 10:00 a.m. application of Derby Oil Company for cancellation of overages on its Arnold leases in the Graber pool of McPherson County will be heard. At 11:00 a.m. the same company will apply for cancellation of overages on its Hauschild and Theede leases in the Wherry pool, Rice County.

KANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARBER COUNTY—		
Kansas Oil Corp., Mease 1, ne se se 27-30s-11w (pb to test)	*	4910
BARTON COUNTY—		
Martin et al, Kultgen 1, se se ne 17-16s-12w (pb 3335)	890	3342
Phillips, Kraft 4, ne nw ne 10-17s-11w (pb 3318)	399	3332
Kraft 5, sw sw ne 10-17s-11w	1370	3314
Sinclair Prairie, Grossardt 1, ne ne sw 10-17s-11w (otd 3319)	691	3345
Murfin et al, Lanterman "C" 1, sw sw se 15-19s-11w	631	3118
BUTLER COUNTY—		
Cox & McGinnis, Houston 3	90	2667
Saco Oil Co., Barnhill "A" 1, nw se sw 23-27s-7e	2	2083
Adair & Morton, Brandt 2, sw se ne 15-28s-7e	35	2715
COWLEY COUNTY—		
E. Wakefield, Whitson 1, sw ne se 8-32s-4e (pb 3292)	100	3294
ELLIS COUNTY—		
Deep Rock, Baumer 27, se se ne 27-11s-17w	1681	3416
Carter, J. Staab 1, sw se ne 11-12s-18w (pb 3495)	*	3716
Austin Drlg., Karlin 1, nw nw nw 13-12s-18w	917	3675
ELLSWORTH COUNTY—		
Stanolind, M. Stumps 1, sw nw nw 30-17s-10w	1539	3287
Transwestern, Disque 1, se se se 32-17s-10w	819	3265
GREENWOOD COUNTY—		
Shul Drlg. Co., Hinchman "C" 3, sw se sw ne 17-24s-13e	*	1636
McPHERSON COUNTY—		
Carter, Hoglund 1, nw sw sw nw 8-17s-3w (pb 3373)	345	3559
E. B. Shawver, Lively 3, se nw nw 21-19s-1w (otd 3448)	90	3448
Lively 5, se sw nw 21-19s-1w	252	3431
RENO COUNTY—		
Davis, Welsh "B" 1, c sw se 4-24s-4w	1146	3372
RICE COUNTY—		
I.T.I.O., Lamberson 1, sw sw se 33-20s-7w	157	3354
Gulf, Hiersch 2, se nw ne 18-20s-10w	768	3328
RUSSELL COUNTY—		
Magnolia, A. C. Rugg 1, se sw ne 27-14s-13w (pb 2913)	1822	2916
Central Pet. Aley "A" 1, sw ne nw 9-14s-15w	578	3075
J. C. Shaffer, Cramm 5, sw sw se 11-14s-15w	111	3070
Wolf Creek, Rouback 1, sw sw ne 15-14s-15w	2259	3210
Transwestern, S. Boomhaur 3, se sw sw 19-15s-13w	1206	3326
Cities Service, Tittle "C" 1, ne ne nw 13-15s-14w	1328	3125
SEDGWICK COUNTY—		
Murfin et al, Wickham 1, ne ne sw 18-28s-1e	*	3567
STAFFORD COUNTY—		
Stanolind, F. Mettscher 1, ne ne nw 13-22s-13w	1071	3684
SUMNER COUNTY—		
Bradley & Lindsey, Duncan 1, ne se sw 15-35s-2e	*	3685

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN FIELDS

Wildcat in Edenville Township believed major strike.

* * *

Eleven active operations start within three days.

* * *

Buckeye gets important west extension.

Mt. Pleasant, Mich.—An offset spudding, three rigs building, seven locations with material on the ground and six surveyed locations comprised the first wave of activity to follow a successful wildcat test in Section 27-16n-1w, Edenville township, Midland County, developed by Chapman Oil, Associated Petroleum and Devonian Oil Companies as a joint venture. Operators predicted 30 strings of tools would be running by March 1.

Chapman et al's State 1, believed the key to a big development campaign in Michigan this year, initialed 500 barrels the first 24 hours from 52 feet in Dundee lime, bottom hole 3792 feet, and is now estimated capable of 850 barrels on the basis of an 8-hour gauged production of 275 barrels, produced in 5-3/16-inch casing with master gate one-quarter open. Well has been shut in for four days due to inability to move oil. The later gauge was taken after the well produced 1689 barrels the first four days, pinched in, and then was deepened from 3792 to 3793½ feet.

Sun Oil Company has approximately 85 percent of the acreage, now seen as in the play, under lease. Mammoth Producing & Refining Corporation started to drive 10-inch casing on February 8 on the direct west offset; Chapman et al is building rigs for a north offset and State 2; Smith Petroleum is building rig five locations north; and Sun Oil Company is building rig for a south offset.

A sudden turn in the weather to above freezing temperature had turned most field roads into quagmires at midweek, making heavy truck traffic next to impossible in the district. McClanahan Pipe Line Company, who contracted to purchase the oil, laid a temporary 2-inch line to a truck loading rack, but due largely to road conditions has been able to handle only about 200 barrels per day.

No proration has been authorized for the discovery, however, operators were reported attempting to work out a program for the area if it proves up to expectations of being a major area. Current prices posted for the area are equal to Greendale grade crude, $1.12

MICHIGAN
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
GLADWIN COUNTY—		
Pollock Gordon, Delbridge 1, nw nw ne 1-17n-2e	*	3520
Cryden & Rowmor, Shaffer 5, ne ne sw 12-18n-1w	450	3610
E. S. Beaver, Armstrong B-3, se sw sw 23-18n-1w	200	3588
Jacob Beck, Buhler 3, se sw sw 24-18n-1w	260	3589
Sun, Shumway 1, sw nw se 24-18n-1w	*	3673
Rex Oil Co., Gray 1, nw nw nw 25-18n-1w	80	3587
Mammoth P&R Co., Oard 1, sw sw ne 25-18n-1w	*	4330
Rowmor Corp., Foster 1, ne se nw 26-18n-1w	150	3592
Marshall Bauman, Hostetler 1, ne ne ne 27-18n-1w	500	3591
Rex Oil Co., Arkwright 3, nw nw ne 35-18n-1w	140	3587
Daily Crude Oil Co., Caplan 1, ne se ne 10-19n-1e	*	3514
GRATIOT COUNTY—		
Bliss, Tr., Martin 1, sw sw nw 26-10n-3w	*	3178
IONIA COUNTY—		
Rex Oil Co., Marion 1, ne nw nw 11-8n-5w	*	3080
ISABELLA COUNTY—		
Pure, McClintic B8, sw sw sw 33-15n-6w	450	3659
Mich. Cities, Cornell 1, c nw 33-15n-6w	¶1½	1410
MIDLAND COUNTY—		
Chapman & Associated et al, State 1, nw sw ne 27-16n-1w	840	3793
Pure, Bond B4, se se 12-13n-2w	40	3549
OGEMAW COUNTY—		
Weber Oil Co., Mills Estate 1, se se se 36-21n-3e	970	2448
Jensen 1, nw se sw 35-22n-2e	96	2638
SAGINAW COUNTY—		
Darke Brothers, Rockwell 1, sw sw sw 5-11n-3e	*	3273
SHIAWASSEE COUNTY—		
W. E. Ross, Tr., McCullough 1, se sw sw 12-6n-3e	*	1900

*Failures; †Junked; ¶Million cu. ft. gas.

At right: T. T. Hawksworth, president Michigan Devonian Petroleum Company (left) and Dr. R. B. Newcombe, geologist, Associated Petroleum Company.

Below: Guy E. Chapman, head of Chapman Oil Company (left) Roy Hogan, drilling contractor, and members of the crew.

per barrel, 2½ cents over the Buckeye grade price. Oil samples from the discovery tested 41.3 gravity at 60 degrees.

Buckeye Extended

An important west extension of the Buckeye field loomed this week when Marshall Bauman's Hostetler 1, NE NE NE 27-18n-1w, three locations west of previously drilled Dundee production, initialed 501 barrels natural from Dundee lime at 3591 feet, 79 feet in lime. Four new rigs were being built at midweek.

Socony-Vacuum Oil Co.'s casing program on the projected deep lime test in Montcalm County (Hansen 1, Section 22-12n-6w), may be upset due to striking 5 million feet gas in Stray sand at 1313-19 feet. Operators found it necessary to set an 8-inch casing string to braden off the gas. Original plans were to carry an 8-inch hole to the top of the Monroe limestone.

Morris-Sutherland Development Co.'s Brandet 1, Section 36-5n-14w, Zeeland township, Ottawa County, about 10 miles northwest of the Salem (Allegan County) field, tested 50 barrels of oil from Traverse lime at 1710 feet following a 1000-gallon acid treatment. Operators were testing this week with prospects of establishing commercial production.

ILLINOIS DEVELOPMENTS

Large well at Noble revives interest in area.

★ ★ ★

Deep Jasper County test abandoned at 4200 feet.

Olney, Illinois.—Interest in the vicinity of Noble, Richland County, was renewed Tuesday when Mammoth Producing and Refining Company drilled its A. W. Bell 1, Section 28-3n-9e, Decker Township, into a highly productive McClosky saturation at 3060 feet. Estimates on initial production, which quickly filled the 250 barrel tank on the muddy location, ranged from 50 to 100 barrels an hour and workers were rushing to complete an extension to the Owensboro Company's gathering system from the company's nearby Brace-McCauley 1. The well had been drilled to the top of the McClosky with rotary tools and drilled in with cable tools. When the pay from which the Brace-McCauly well was producing did not appear to be as good as at the first test, the well was deepened about 10 feet where the large pay was struck. Drilling was stopped three feet in the pay pending completion of the gathering line, at which time the well will be deepened a few feet and completed. The Brace-McCauley 1, on the same section, was completed December 20 at 3046 feet with initial production of 250 barrels after acidization with 750 gallons. The cable tool outfit is to be moved over to this well for deepening which is expected to result in increased production. Success of the Bell well will bring a spurt of activity in the area south of Noble.

A half mile northeast of the Brace-McCauley, Max Pray's Harold Runyon 1 was preparing to acidize with a big load late last week, operators hoping to make a commercial well from this same second McClosky pay. The well was considered dry when the first McClosky appeared too tight, but picked up a new saturation at 3121 feet.

There were several dark spots in the Illinois wildcat picture last week. The Jasper County deep test, recorded as Hoffman et al's O. D. King 1, Section 20-8n-10e, Crooked Creek Township, was abandoned at 4200 feet and the rig removed. Saturation was found in the shallower as well as the deeper sands, but they were not sufficiently porous to make commercial production. It indicated, however, that the Devonian and deeper formations may yield production. Bottom hole money for the test was furnished by Shell Petroleum Corporation, The Texas Company and Ohio Oil Company.

Further exploration in northeastern Wayne and northwestern Edwards Counties is apparently doomed for the present with announced abandonment of Morrison & German's W. D. Gibbs 1, four miles east of Mt. Erie at 3270 feet. Coring was only done about 20 feet and it is believed the test may be re-opened later.

After four cores failed to show a McClosky saturation, Papoose Oil Company temporarily abandoned its Edith Lynch 1, Section 5-3n-10e, Olney Township, Richland County, at 3124 feet. The failure will not condemn territory in the Olney area, but will serve to concentrate activity north of Olney at the expense of the area west of the city. Bur-Kan Drilling Company's Allen 1, Section 26-4n-10e, Olney Township, was flowing between 400 and 500 barrels a day last week following acid treatment given a week ago. Success of this well, which confirmed Olney Township, will bring an active campaign north of Olney and possibly within the city limits.

In the southwestern part of the basin, Stanolind Oil & Gas Company's Leiner 1, Section 20-7s-4w, Bradley Township, Jackson County, was dry in the Devonian chert and is drilling ahead.

Ground conditions in the basin area have been slowly improving, with wind and sun drying up the mud in many places. The improvement, however, is not yet sufficient to permit new operations to proceed with any noticeable degree of speed and the possibility of rain or soft snow that would offset the slight gains makes it impractical to set dates for starts of new test.

ILLINOIS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JASPER COUNTY—		
Hoffman et al, King 1	*	4200
RICHLAND COUNTY—		
Ohio Oil Co., Arbuthnot 8	475	2951
Godlin & Huffman, Shannon 1	100	3021

*Failures; †Junked; ¶Million cu. ft. gas.

J. B. KELSEY, with the old Prairie Oil & Gas Company for more than 40 years, and father of Dana H. Kelsey, vice president of Sinclair Prairie Oil Company, will celebrate his 100th birthday Monday, February 14. Kelsey resides near Harlingen, Texas, and drives his own car in town every day to buy a cigar. He refuses to buy them box at a time, stating he wouldn't have anything to go to town for if he did so.

EASTERN FIELDS

After 20 years plugged gasser to get offset.

★ ★ ★

Completing gas well in Warren Oriskany.

Pittsburgh.—C. E. Dague, Frank Ebeling et al will drill a test on the C. W. Dague farm between Sand Hill and Dallas, in Marshall County, northern West Virginia. The site is about 1500 feet from a gas well drilled about 20 years ago with an initial open flow of 400,000 cubic feet a day. Lack of pipe line facilities brought plugging of that well, but since that time Natural Gas Company of West Virginia has constructed a line running to Wheeling, which can be connected to any production that might be obtained in the vicinity of this test.

Largest West Virginia well of the week was a gasser in the Oriskany area of Kanawha County—South Penn Oil Company's Newhouse 4, near Sissonville, which was bottomed at 4804 feet with a gauge of 14,000,000 cubic feet a day. The sand was topped at 4794 feet, and first gas encountered 4 feet in. The area continues one of the most active in West Virginia.

In the New York-Pennsylvania Oriskany area, Evjen et al appear to have broken what had been a growing list of Warren County, Pennsylvania, deep test failures with their Dusenberry 1 wildcat in Watson Township. The Oriskany was topped at 4478 and first gas encountered 2 feet in. Deepening an additional 2 feet brought an open flow of about 1,000,000 cubic feet a day. The test is shut down to run casing. Whether it can be successfully completed, however, remains in doubt, as other wells in the vicinity have turned to salt water after promising Oriskany gas shows. Five deep tests were drilled in Warren County during the past year —failures all of them. Two were by Potter Development Company and one each by Sylvania Corporation, Belmont Quadrangle Drilling Company and Kane Industrial Gas Company.

EASTERN FIELDS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
PENNSYLVANIA		
GREENE COUNTY—		
Eddy & Johnson, E. W. Maple 2	¶.80	2064
Anna L. Garard, M. Minor 1	¶.40	2950
Southwest Pennsylvania Gas Corp., Thomas Smith 3	¶.23	2570
WASHINGTON COUNTY—		
R. M. Duddin, J. E. Johnston 2	¶	2593
NEW YORK		
New Pennsylvania Development Corp., E. G. Husted 1	¶20	3837
Clancy et al, M. Hargraves	¶16½	3983
New York State Natural Gas Co., Franklin Miller 1	¶10½	4229
Belmont Quadrangle Drilling Co., John Allen 1	¶9	4171

*Failures; †Junked; ¶Million cu. ft. gas.

EASTERN FIELDS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
INDIANA		
DAVIESS COUNTY—		
Midwest Dev. Corp., Sun Life 2....	*	736
GIBSON COUNTY—		
Midwest Dev. Corp., Thompson 3..	*	1816
KNOX COUNTY—		
Worthington Pet. Corp., Ford Est. 1	*	2375
PERRY COUNTY—		
Roederer & Albertson, Rissler 2....	*	365
Herman Wanninger, Wanninger 1...	*	720
VIGO COUNTY—		
Carter, Drake 2	37	2145
OHIO		
ASHLAND COUNTY—		
Ohio F. G. Co., Parrott 1.....	¶.15	2890
ATHENS COUNTY—		
A. D. Townsend, Bainey 1	*	1730
BELMONT COUNTY—		
Union G. & O. Corp., Kurth 2.....	*	1700
CUYAHOGA COUNTY—		
Dempsey, Jan Realty Co. 1.....	¶.16	2460
JEFFERSON COUNTY—		
Kelly et al, Barnhouse et al 1.....	*	1270
KNOX COUNTY—		
Pure, Blue 1	100	3145
Preston Oil Co., Bailey 3.....	50	3176
H. E. Perkins, Banbury 1.....	¶.25	2860
Ridgeway et al, Did nger 1	¶.24	2850
LICKING COUNTY—		
G. H. Long, Tayman 2	2	790
Stricker & Armbuster, Priest 1.....	¶.05	725
MEIGS COUNTY—		
A. N. Bengel, Williamson 1.....	*	1530
D. E. Chase, Chase 1	*	458
Mayer et al, Sonders 2	*	829
MONROE COUNTY—		
Gold Crown O&G Co., Lucas 1.....	1	1400
Ulrich O&G Co., Ulrich 1.....	1	1785
Richfork Oil Co., Harrison 1.....	¶.13	1341
MORGAN COUNTY—		
North Oil Co., North 2.....	3	475
STARK COUNTY—		
East O. G. Co., Smith 1.....¶2.69		4619
SUMMIT COUNTY—		
East Ohio Gas Co., Caston 1.....¶2.50		4288
WASHINGTON COUNTY—		
Devitt et al, Fisher 21.....	2	870
KENTUCKY		
HANCOCK COUNTY—		
W. E. Hupp, Easton 4.....	10	575
Cumberland Pet. Co., Reardon 2....	¶.52	509
Damron et al, Phillips 2.....	¶.17	632
LEE COUNTY—		
Oakes & Barnes, Combs 4.....	25	1012
South Penn Oil Co., Flahaven 98....	10	925
McLEAN COUNTY—		
Hoosier Dr lling Co., Cook 3.....	75	1750
OHIO COUNTY—		
Rex-Pyramid Oil Co., Stinnett 16..	15	615
Whitehouse O&G Co., Joe Schultz 3	¶.20	530
Petroleum Co. et al, Porter 1.....	*	1590
Randall et al, Funk 1	*	685
WEST VIRGINIA		
BOONE COUNTY—		
Owens-Ill. Glass Co., Halfield 5.....	¶.15	2300
BRAXTON COUNTY—		
Pittsburgh & W. Va. Gas Co.,		
Parkersburg Mills 7632	¶.38	1563
D. S. Woodyard 7642	¶.13	2406
McCall Dr. Co., H. G. Clouser 1....	*	2850
CABEL COUNTY—		
C. Teubert, Teubert 1.....	¶.02	3017
CALHOUN COUNTY—		
Witago Gas Co., Mollohan 1.....	5	1522
GILMER COUNTY—		
E. L. Bush, Jones & Young 1.....¶1.00		1897
HARRISON COUNTY—		
Geo. F. Harbert, Varner 2.....	5	3150
KANAWHA COUNTY—		
South Penn Oil Co., Newhouse 4..¶14.00		4804
United F. G. Co., Johnson 4780....¶3.55		4796
Nina Chandler 4837 .....¶9.31		4837
W. Va. Gas Corp., Legg 1.....	¶.63	5087
LINCOLN COUNTY—		
Guyan Oil Co., C. & O. 2.....	8	1476
MINGO COUNTY—		
E. L. Lusher, Stepp 1.....	¶.15	3700
MONONGALIA COUNTY—		
Carnegie Nat. Gas Co., White 555..	*	2355
PLEASANTS COUNTY—		
Borland Springs Oil Co., Roberts 1..	*	840
RITCHIE COUNTY—		
Lucas & Mahaney, Robinson 1.....	¶.20	2100
Clem S. Morris, Cox 2.....	¶.30	1610
Casidon O&G Co., Hill 2.....	¶.05	1980
WAYNE COUNTY—		
Gragston O&G Co., Vers 1.....	¶.09	2154
WETZEL COUNTY—		
Amos et al, Shepard 1.....	¶	2110
WIRT COUNTY—		
Fred Morehead, Hickman 1.....	1	702

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH TEXAS FIELDS

K-M-A extended 3½ miles to northwest.

★ ★ ★

Field now has 169 active operations.

Wichita Falls, Texas.—Nitro shot given Rathke Oil Company et al's T. L. Burnett-Gulf 1-A, 3½-mile northwest outpost for the K-M-A deep area, failed to develop flowing production, although the prospects are favorable for a pumper. The owners have an optimistic viewpoint on the area yielding commercial production, and are drilling below 800 feet on W. B. Throckmorton 1, a north offset.

This semi-wildcat on the Burnett ranch filled 1000 feet with oil in 30 minutes after 225-quart nitro shot in the Strawn sandy-lime at plugged back depth of 3692 feet. Cavings caused by the shot will require cleanout work before the production capacity of the well can be determined. It is the third test in the K-M-A area to drill to the Ellenberger lime, which has carried water in each instance. This particular project found water in Ellenberger at 3738-39 feet, but obtained shutoff in plugging back to 3692 feet. Location is near C NW NE HT&B Section 4, A-572, about quarter mile north of Gulf Oil Corporation's Burnett 1, which logged Ellenberger at 3715-4295 feet, with an elevation of 1124 feet, and failed to make a commercial producer when plugged back for nitro shot in Strawn in July, 1929.

Development of commercial oil production by Rathke Oil Company et al's test would cause prospecting to get under way on a large scale along the Electra arch. The previously drilled failure offered encouragement for oil from the Strawn, which is appreciably thinner on the arch than within the K-M-A field. The new test logged top of big lime marker at 3420 feet, with an elevation of 1137 feet, and first saturation at 3552 feet. The discovery well of the K-M-A deep zone logged first saturation at 3675 feet, and top of Ellenberger at 4290 feet.

Drilling activity in the K-M-A area is expanding faster than generally anticipated. Field reports list 169 operations, including 53 tests in process of completion, or with the oil string cemented. Surface pipe has ben landed on 15 tests, and rotary rigs were in service on 40 tests between the two casing stages. Derricks and rigs accounted for 26 listings, while locations numbered 31. Four tests were listed as inactive in the Strawn.

Operators are confident that the current top allowable of 58 barrels daily, less Sunday shutdowns, will be reduced in the near future, and are speeding up their drilling programs in order to cash in on the higher allowable. Four majors serving the deep area with oil outlets continue to actively solicit connections. The anticipated cut in well quota is based upon the possibilities of the Commission placing a limit on the dstrict's output.

New Wells Completed

Staley Oil Company's W. P. Ferguson 1, SEc W½ Block 2, Peterswick Survey, situated in southwest portion

NORTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY (K-M-A)—		
Vierson et al, Ferguson 1, blk 16...1200		3861
ARCHER COUNTY—		
Burns et al, Richardson 1, blk 9....	*	1164
Richardson 2, blk 9	*	1218
Cockburn et al, Carr 3-B, sec 2437..	20	1387
Danson Oil Co., Benson 9-A, sec 1808	25	940
Westmount Oil Co., Dempsey 5, blk 10	140	1783
CLAY COUNTY—		
Bridwell Oil Co., Edrington 10-A..	47	1125
Metzner et al, J. J. Taylor 5.....	125	1115
J. J. Taylor 6	150	1118
COOKE COUNTY—		
Kiel & Kiel, Perkins 3.....	*	1080
Mudge Oil Co., Johnson 21.....	78	1229
Robinson et al, Otto 11-B, blk 6...	12	1260
JACK COUNTY—		
Bennett Pet. Co., Matlock 1, sec 1	324	3089
Dearing et al, Jones 7.....	351	3187
Gilmore et al, Gillespie 1, sec 2.....	*	605
Hammon et al, Miller 1	*	3030
MONTAGUE COUNTY—		
Bridwell Oil Co., Salmon 15-A.....	10	1628
Lesh & McCall, Davenport 5.....	25	2373
WICHITA COUNTY (K-M-A)—		
Burns et al, First Nat'l Co. 23, lot 5	298	3852
Deep Oil Dev. Co., First Nat'l Co. 8, lot 7	793	3845
Fain-McGaha Oil Corp., E. R. & L. D. Fain 1 1500		3841
Grace & Woods, Hodges 2.....	600	3925
Kadane-Griffith Oil Co., Kemp 1-C, lot 2 1500		3765
King Oil Co., Wigley 1 1200		3845
Lewis Prod. Co., Wichita Nat'l Bank 1 1680		3750
WICHITA COUNTY—		
Hammon et al, Lalk 1, blk 284.....	*	950
Pois & Schultz, Foster-Allen 8-C....	*	1291
Roach et al, Love 1	*	527
Rubsam & Hunter, McClure 20-A, sec 5	5	590
YOUNG COUNTY—		
Atchley et al, Benson 5, sec 1392....	60	912
Chambers & Humphreys, Benson 1-A, sec 1398	*	1002
Eagan et al, Dahse 1, sec 18.....	*	1252
Gilmore et al, Speer 2.....	*	664
Glover et al, Hennig 4, sec 410.....	12	1088
Johnson et al, Hall 9.....	16	730
Steele et al, Drum 1, sec 603.....	*	565
Strong et al, K ng 1, sec 447.....	573	3980

*Failures; †Junked; ¶Million cu. ft. gas.

of the field, flowed 75 barrels oil during the first 55 minutes after drilling to 3845 feet, then gauged 360 barrels in 14½ hours. Top of lime was logged at 3735 feet, with an elevation of 1047 feet. Magnolia Petroleum Company's H. W. Barton 1, located on 70-acre lease, is an east offset. The latter awarded drilling contract to Walter D. Cline on its first test, but will move in one or more heavy rotaries from other districts.

The Texas Company has become the most active of the majors in the deep area, having 3 active tests on its First National Company 40-acre tract, and location for Waggoner Bros. 14-A. This Company's First National Company 23, lot 8, block 26, was having trouble with shale cavings at 3799 feet, with occasional oil heads from broken pay topped at 3622 feet, with an elevation of 1009 feet.

Numerous wildcat projects launched in Wichita County, eastern Wilbarger and northwestern Archer will reach decisive levels before the end of the current month. Roy H. King, Frabor-Hodges Company's J. N. George 1, O. Farrish Survey, 5 miles southwest of Burkburnett, logged metamorphic rock at 2932-37 feet, and was drilling in schist at 3320 feet. It has an elevation of 1036 feet. Wildcatting has extended to the east edge of Wichita Falls' city limits. Bob Waggoner, co-discoverer of the spectacular Northwest field, and Dan Holmes have made location for Ed. Waggoner 1, 2500 feet from east and 990 feet from south lines of the Robert Evans Survey, A-74. Block of 2000 acres was assembled for a 4000-foot test. Location is near a 2452-foot failure drilled by Sun Oil Company, with minor gas showings.

Recent slump in lease trading within and near the K-M-A field has been reflected by a deflation of prices on acreage retained by speculators and fee owners. This trend was anticipated in some circles, and prospective buyers are awaiting a further slump before making offers. Purchase by Phillips Petroleum Company of 1060 acres of semi-wildcat acreage out of the Griffin and Riley lands, Floyd Jordan Survey, from C. W. Boller et al was the last major trade reported. The former assumed obligation to drill four 4000-foot tests in addition to a bonus of $1,070,000, including $320,000 cash. The acreage lies west and north of the river, and was subjected to geophysical survey before the trade was concluded.

Walter H. Gant et al's C. M. Worsham 6, SE SE NE H&TC Ry Section 37, Block 4, Worsham pool, eastern Clay County, cored oil show in sand at 3814-24 feet, and will continue to the 3900-foot horizon. Two wells are producing from the Strawn near the 3300-foot level, and two prolific completions have been recorded in the lower zone, possibly lower Strawn, or Bend lime.

Corpus Christi, Texas.—Greater outlet for Southwest Texas fields served by Magnolia Pipe Line Company is being provided by the erection of a booster station on the company's 70-mile 8-inch line that extends from Tilden station, situated on the Duval-McMullen County line, to Corpus Christi. The new station is near Orange Grove, Jim Wells County, and will increase the capacity of the line from 15,000 to 20,000 barrels daily.

WEST TEXAS FIELDS

Yoakum part of Wasson may extend east.

* * *

Wildcats in Permian Basin will increase.

Midland.—Expansion of the Yoakum County portion of the Wasson field more than one mile eastward is forecasted by the high structural position registered by Shell Petroleum Corporation's George Baumgart 1-C, near C W½ NE Section 866, Block D. Minor gas showings were present in cores taken below 4787 feet. Coring was resumed at 4820 feet, and oil string will be cemented near the 4880-foot level. Top of brown lime was logged at 4000 feet, and first solid lime at 4470 feet, with an elevation of 3580 feet. It is 1½ miles southeast of the company's Baumgart 1-A, which made a 426-barrel producer at 5000 feet, with top of solid lime at 4470 feet, or 883 feet sub-sea. Successful completion will give this section of the field a width of 8 miles. Location has been made by Shell Petroleum Corporation for Baumgart 1-D, SWc Section 826, about half-mile northeast of the outpost.

The Texas Company's Willard 1, C SW SW Section 799, offsetting production, flowed 377 barrels oil in 15 hours after using 7000 gallons of acid, two stage treatment, in lime at 4978-5085 feet. Rig has been skidded one location east to drill Willard 3. This company's Willard 2, NW NW Section 799, carried 3000 feet oil in hole while drilling saturated zone at 5065 feet. Sun Oil Company's Lynn 1, west offset to the latter, responded to treatments with a total of 6000 gallons of acid with a flow of 52 barrels the first hour from lime at 5065 feet. Continental Oil Company and Amon G. Carter's Wasson 5, south offset to the discovery well of the Wasson field, Gaines County, flowed 30 barrels per hour natural for 3 hours with gas volume rated at 2,750,000 feet daily, through open casing and tubing. Hole is bottomed at 4970 feet.

Trio of new wildcats for Yoakum County are pending. Magnolia Petroleum Company has shipped in a heavy rig to drill J. D. Webb 1, SWc NE Section 477, Block D, 2 miles southwest of Plains. Group of independents have contracted to drill E. A. Graham 1, near C S½ SW Section 267, Block D, 8 miles northeast of Plains. Finley, Cherry et al are reported to be negotiating for a test to be in the SE Section 106, Block D, situated in the northwest portion of the county.

Wildcat operations in other sectors of the Permian basin promise to increase shortly, although independents are finding it difficult to promote tests through the sale of protection acreage unless the area includes short term leases held by majors. Skelly Oil Company is credited with planning a test in eastern Hockley County on a drilling block, and location may be assigned to labor 18, league 16, Howard County School Lands. J. H. McClure et al are negotiating for a 4700-foot test on University lands in Andrews County and southwest of the Means field. Humble Oil & Refining Company is donating acreage and dry hole money, and location may be assigned to the S½ Section 16, Block 14.

M. L. Richards, who has been active in Garza County for several years, has assembled a 8000-acre block for a 5000-foot test in the west central portion of the county. Location will likely be assigned to the C NW Section 1303, BS&F Survey. Gulf Oil Corporation's Swenson 1, projected 8000-foot Ordovician test for the northeast corner of the county, has rigged up rotary.

T. G. Shaw et al have contracted to start work by mid-April on a Permian lime test in southwestern Howard County in return for lease on a 2000-acre block. Location will be in Section 32, Block 34, T&P Ry. Survey, T-1-N, situated northwest of the Harding pool.

Ellenberger section of the Ordovician is the next goal of Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's McKee 1-A, northern Pecos County deep wildcat, after failing to make a commercial oil producer from Simpson at 5294 feet. Using cable tools, the hole deepened to 5325 feet late last week without a production increase. Misleading production reports were circulated when the oil load was swabbed from the hole. Formation oil, rated at several barrels daily, tested 43 gravity.

Stanley Thompson et al's Elsinore 1, southwestern Pecos County wildcat, tested dry at 7128 feet when cement plugs were drilled from 5-inch at 7028 feet. Gun-perforation of casing between 7004-80 feet failed to yield production, and owners propose to deepen and try for production in the Ordovician.

Ordovician Oil Company's Evans 1, Sutton County prospect, logged top of Ellenberger lime at 4073 feet, with an elevation of 2126 feet, and was drilling at 4125 feet. No shows have been reported. Floyd Dodson et al's Texas American Syndicate 1-A, northern Brewster County wildcat, was drilling at 7165 feet, logging sandy shale section of Simpson, topped at 6733 feet.

Introduction of the full length casing

and gun-perforation method of completion in the Seminole pool, Gaines County, by Amerada Petroleum Corporation has been pronounced successful. This company's Riley 1, north offset to the discovery, flowed 298 barrels initial through 1-inch choke, with gas yield curbed to 1611 feet per barrel, after using 2000 gallons of acid. Five-inch pipe was cemented on bottom at 5047 feet, then perforated with 80 shots at 5027-43 feet. Previous completions experienced difficulty with high pressure gas in the upper portion of the oil zone, and several had expensive mud losses due to blowouts and loss of circulation. The new method may prove popular on inside tests because of the insurance against the gas problem and the fact that low gas/oil ratios are possible. However, it will not be possible to shoot such completions with nitro.

Lone Star Gas

Lone Star Gas Corporation and subsidiaries on February 7 reported consolidated net income of $6,820,788 after all charges but before surtax, equivalent to $1.13 a share on the 5,537,717 shares of common stock, after preferred dividends were paid. This compares with $6,192,632 or 99 cents a common share in 1936. Gross revenues for the year just closed were $21,045,799, an increase of $959,000. Expenses, however, jumped $830,140.

Sherman wildcat temporarily halted

Amarillo, Texas.—Progress on Indian Territory Illuminating Oil Company's Davis 1, southwestern Sherman County wildcat, was temporarily halted last midweek to condition hole at 3310 feet. It will be deepened to the water level to try and develop oil production after proving the area for commercial gas production in the upper section of the big lime, topped at 2380 feet, with an elevation of 3599 feet. This wildcat is rated at 31,000,000 feet of sweet gas daily from broken pay at 2705-3116 feet. Volume of gas was not boosted in deepening below the latter depth with cable tools.

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Cities Service Oil Co., Deahl 8	¶10.3	2975
Danciger, Block 3	238	3155
GRAY COUNTY—		
Cambrian Oil Co., G. Cole 5	515	3257
Cities Service, Culler 14	†	3311
Pindu Corp., McAfee 1	*	4000
Smith Bros. Ref. Co., Arends 1	628	3300
Stanolind, W. G. Kinzer 9	326	3312
HUTCHINSON COUNTY—		
Chisum et al, Hodges 2	412	3071
J. M. Huber Pet. Co., Canadian River 3	743	2716
Rieger et al, Hodges 2	143	3058
Stanolind, Haile 12-A	501	3085
Haile 13-A	408	3090
Watkins 6-B	224	2883
WHEELER COUNTY—		
Magnolia, Worley 3	188	2381

*Failures; †Junked; ¶Million cu. ft. gas.

Continue drilling East Texas inside sites

Kilgore, Texas.—Development of inside locations in the East Texas field continues on a large scale basis. Volume of field work this year is greater than that carried on during the same period last year. During January a total of 178 oil wells were completed and added to the proration schedule, according to the Railroad Commission's records. The field added only 144 wells in January, 1937.

Currently the field is credited with 61 rigs in actual operation, representing a decrease of 16 when compared to the previous week. This slump is temporary, as large batches of well permits, involving exceptions to the spac-

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CRANE COUNTY (Jordan)—		
Gulf, Henderson 11	1920	3545
CRANE COUNTY (Sand Hills)—		
Gulf-Cranfill Bros., Tubb 15	306	4420
Humble, Tubb 16	3173	4430
CROCKETT COUNTY (Wildcat)—		
Moore Bros. Corp., Perner 1	*	9105
ECTOR COUNTY (Foster)—		
Barnsdall, Foster 5, sec 13	970	4179
H. C. Foster 7, sec 18	676	4228
Sunray-York & Harper, Johnson 2	862	4278
ECTOR COUNTY (Goldsmith)—		
Devonian Oil Co., Scharbauer 3-E	1056	4195
Gulf, Goldsmith 67	852	4240
Goldsmith 68	3128	4200
ECTOR COUNTY (North Cowden)—		
Phillips, T. P. Land 4, sec 3	444	4220
Stanolind, Roberts 10	747	4355
FISHER COUNTY (Rotan)—		
Montour Prod. Co., E. Smith 2	409	3573
Tide Water Associated, Smith 3	427	3517
FISHER COUNTY (Wildcat)—		
Southern Oil Corp., Ramby-Bacot 1	*	4018
GAINES COUNTY (Seminole)—		
Amerada, Riley 1	298	5047
GAINES COUNTY (Wasson)—		
Shell, Cox 1	*	4995
HOWARD COUNTY—		
Moore Bros. Corp., T. P. Land 3	539	2830
Shasta Oil Co., Dodge 13	1465	2765
Texas Land & Mortgage Co. 2-B	1444	2850
JONES COUNTY—		
R. B. Farris, Ungren & Frazier, I. M. Nowlin 1-a	*	3567
Bells Wells Oil Co., Pond 1	*	3504
Fain-McGaha Oil Corp., Williams 2	300	1949
Humphrey et al, Fielder 1	*	3320
Trippett et al, Guitar 15	183	2008
Ungren & Frazier, H. Dorsey 2-G	100	2497
McCULLOCH COUNTY—		
Nixon et al, Pearce 1	*	1001
MITCHELL COUNTY—		
Magnolia, Foster 9	144	2865
PECOS COUNTY (Pecos Valley)—		
Two States Oil Co., Fromme-Magnolia 1	266	1890
PECOS COUNTY (Wildcat)—		
Francis et al, Westermann-Hadden 1-a	¶9	2978
TAYLOR COUNTY—		
Wichita Prod. Co., Linecum 2	*	2147
UPTON COUNTY (McCamey)—		
Anderson Oil Co., Elder 4	804	2387
Brown et al, Powell 1-B	*	2787
Gulf, Shirk 15	667	2315
Hines et al, Harlan-Gulf 1	*	2174
WARD COUNTY—		
Gulf, Estes 78	2374	2688
Estes 79	2540	2686
Proctor et al, Cole 7	159	2255
WINKLER COUNTY (Henderson)—		
Humble, Walton 20-C	5000	3031
WINKLER COUNTY (Kermit)—		
Humble, Colby 26-A	1347	3088
Shell, Leck 1	343	3060
T. P. Coal & Oil Co.-E. M. Wahlenmaier, Duval Roy. Co. 6-a	1198	3080
WINKLER COUNTY (Keystone)—		
Falcon Co., McCutcheon-Humble 15	300	3399
YOAKUM COUNTY (Wildcat)—		
Lou Stogner & E. H. Pipkin, Blades-Pollard 1	*	5307
YOAKUM COUNTY (Wasson)—		
Denver P&R Co., Whittenburg 3	456	5028

*Failures; †Junked; ¶Million cu. ft. gas.

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Ambassador Oil Corp., Cunningham-Hamilton 3 (5-ac)	6800	3762
London School 9 (3.33-ac)	7500	3763
London School 11 (3.33-ac)	7500	3766
Fischer et al, Wooley 1 (⅛-ac)	7200	3765
Gulf, Baton 11 (56¾-ac)	100	3654
Humble, Holt 16-C (99.63-ac)	5200	3757
Simmons 5 (29.1-ac)	7800	3762
Sneed 14 (104.7-ac)	9800	3741
Sneed 15 (104.7-ac)	9800	3743
Y. Hunt, Crews & Maddox, Motley 5 (25.14-ac)	3600	3772
P. G. Lake, Inc., Maxwell 5 (21.81-ac)	750	3712
Mid-States Oil Corp. (was Turman Oil Co.), R. Dark 12 (48.76-ac)	3500	3769
Ohio, Moores 37 (201.4-ac)	1200	3670
Pine Pet. Co., Thrash 4 (9-ac)	4000	3702
Rubin et al, Keeling 3-B (5¾-ac)	3400	3760
Shell, Brett-Lion 5 (24.74-ac)	3500	3749
Sinclair Prairie, McCord 8 (50-ac)	150	3748
J. B. Sneed & Co., Gossett 6 (16.63-ac)	600	3681
Sun, Pace 38-B (637.45-ac)	143	3739
Theron Oil Co., Deason 3 (5-ac)	900	3672
Tres Oil Corp., Deason 4 (5-79-ac)	1000	3679
Williams et al, Wiley 4 (10-ac)	1800	3665
KILGORE AREA—		
Hall & Hall, Dickson 3, blk 152	450	3577
Dickson 4, blk 152	680	3580
Hamill & Smith (was Fine Oil Co.), Barton 2 (78/100-ac)	3600	3559
Humble, Reed 10 (70-ac)	1200	3665
Magnolia, Radford 39 (252-ac)	4500	3603
Overton Ref. Co.-Carroll-Thompson, Jerry-Rider 2, lot 2, blk 118	750	3545
Overton Ref. Co., King Bros. 3 (5.33-ac)	3000	3525
Schroeder et al, Kennedy 3 (10¼-ac)	750	3678
Sun-Seaboard, Strong 10 (50½-ac)	9200	3646
Tide Water Associated, Hughey 34 (200-ac)	4200	3478
Wells-Gann Drl. Co., Charles 4-A (7.57-ac)	2500	3665
Johnson 5 (4.71-ac)	3600	3526
LONGVIEW AREA—		
Arkansas F. O. Co., McKinley Bros. 18-A (96.74-ac)	7300	3605
Atlantic, Tooke 8-A (40-ac)	10,200	3700
Humble, Smith 40 (245.98-ac)	6500	3645
Willingham 15 (100.6-ac)	7200	3629
L. & G. Oil Co.-Dean Bros., J. S. Monk 1 (21.3-ac)	750	3714
Margay Oil Corp., Freeman 4 (28-ac)	6000	3693
Peyton Bros., Christian 6 (17.77-ac)	9000	3605
Phillips et al, League 9-B (24.9-ac)	4200	3596
Rudco O&G Co., Nicholson 5, Tr. 2 (44.9-ac)	1200	3773
Shell, Hampton 23 (169-ac)	7800	3663
Sinclair Prairie, Lawson 21 (84.19-ac)	9000	3621
Stanolind, Jones 8-B (30.58-ac)	8800	3666
Sun, Satterwhite 18 (89.85-ac)	9000	3655
Sun-Seaboard, Akin 27 (163.4-ac)	10,200	3615
Tide Water Associated, Castleberry 29 (202-ac)	2400	3585
Sheppard 18 (114.36-ac)	8500	3633
FRANKLIN COUNTY (Talco)—		
Byrd & Frost, Sanders 1 (42-ac)	21	4320
Magnolia & Humble, Owings 12 (79½-ac)	330	4300
TITUS COUNTY (Talco)—		
Humble, Groves 3 (82.9-ac)	627	4326
ANGELINA COUNTY—		
Bonham et al, Cameron Lumber Co. 1	*	610
ANDERSON COUNTY—		
Barnsdall, Swanson 1 (243-ac)	*	5245
MARION COUNTY (Rodessa)—		
George Barham, Brantley 2, R. Bennington sur	432	6022
Gulf, Beall 1, A. D. S. Coy sur	300	6111

*Failures; †Junked; ¶Million cu. ft. gas.

ing rules, have been approved lately by the Commission.

Enforcement of the Sunday shutdown on production for 6 consecutive weeks, instituted January 23, and declining demand for the high priced crude produced in this field has not affected the drilling program.

The field added 50 flowing and pumping wells the past week, including 24 for majors. Analysis of the completion list reveals that 30 of the new wells were drilled on leases that have an average density of one well to 5 acres or less, including 19 wells on tracts that average less than 3 acres for each producer.

Methods used by operators in obtaining permits to drill additional wells on densely drilled leases generally involves the payment of substantial cash sums for legal and technical aid.

Kelsey Dome wildcat proves a failure

Tyler.—Elimination of Kelsey Dome, Upshur County's unusual geological feature, as a prospective producer from the lower Glen Rose section of the Trinity occurred when Tom Hunter and American Liberty Oil Company's Carter 1 showed 1000 feet of salt water when formation tester was used at 6991-7111 feet. This wildcat will be deepened to the Travis Peak horizon. Kelsey Dome attained prominence in geological circles prior to the discovery of the East Texas field through its high structural position, and has been rated as a good prospect for deep production.

Protection string of 7-inch pipe is to be run by Stanolind and Ramsey Petroleum Corporation's Norris 1, located on Thornton fault, Limestone County, after drilling to 8735 feet. This wildcat entered the white lime, equivalent to the Snow Hill lime zone in Arkansas, at 8525 feet, and is the second in the Woodbine basin to reach this formation.

Gray and Wolfe's Wupree 1, located 2 miles south of production in the Rusk pool, Cherokee County, has been abandoned after testing water in the Woodbine at 5074-5170 feet.

East Texas salt water disposal order

Ohio Oil Company last week was granted a permit to dispose of East Texas salt water by injecting it into the Woodbine formation.

The order provides that the water may be returned on the Ohio Oil Company's J. H. Sharp lease in the Coy Survey, Smith County, Texas. The effect of this order is to permit injection of water on a west edge lease which is now producing oil. It should be noted that this order varies materially from that granted the Humble recently, since that company plans to inject the water into the Paluxy formation, some 2000 feet below the producing Woodbine.

The Ohio Oil Company order provided that the water should be injected "in the lowermost portion of the permeable Woodbine sand."

SOUTHWEST TEXAS

Aggressive drilling in prospect for Agua Dulce area.

* * *

Nueces County test planned to go to 12,000 feet.

Corpus Christi.—Union Producing Company is preparing an aggressive deep-drilling program in the Agua Dulce district of Nueces County, where it has opened another oil field. The company controls several thousands of acres of proven or potential oil and gas producing properties in the original Agua Dulce and the new North Agua Dulce or Banquette area.

The new discovery is A. B. Simmons 1, 1350 feet out of the southwest corner of a 1000-acre tract in the Agua Dulce Grant, which late in the week was being gauged. The test topped sand at 4810 feet, which continued to 4835 feet. The hole is bottomed at 8706 feet, but was plugged back and perforated at 4810-35 feet. Flowing through ¼-inch choke, it made several million cubic feet of gas and sprayed considerable high gravity oil. Storage was to be erected and a regular completion effected. While flowing, the test showed a working pressure on tubing of 1850 pounds and casing pressure of 1900 pounds.

Two miles to the southwest and on the northeast edge of the Agua Dulce field, the company was drilling after setting 21½-inch surface pipe at 397 feet. The well, Minnie Brown 1, is scheduled to 12,000 feet or the Cockfield. This is the deepest well ever to be drilled in South Texas. The concern has plans for two more deep wells, one on the L. F. Chapman land and another on the Perkins tract. C. L. Galladay, another outpost well on the northeast side of the Agua Dulce field, is making hole around 7700 feet, having passed through a number of sands.

One well was completed as an oil producer to extend the Turkey Creek (West Saxet) field, Nueces County, 1500 feet to the east, while a second is shut down for orders at 6215 feet, finding salt water in the 5800-foot discovery sand. The producer is Renwar Oil Corporation's McKinzie 1, which flowed 350 barrels of pipe line oil in 24 hours through 3/16-inch choke after casing was perforated at 5852½-27½ feet. The pressures were 950 pounds on tubing and 1075 pounds on casing. Pat R. Rutherford's Stewart 1, 3300 feet southwest of the discovery, showed salt water at 5859-88 feet to define the field in that direction.

Wildcatting shows a material upturn with new locations being announced in practically every county of the South Texas Gulf Coast. Several are on highly important geophysical prospects.

A new oil field for San Patricio County, third discovery by a single company, was indicated February 11 when Plymouth Oil Company's Mrs. F. Brigham et al 1, eight miles southwest of Taft, showed for a producer in the Frio sand at 5665 feet. The test cored sandy shale with sand showing a good oil odor at 5627-30 feet, sand with odor at 5630-57 feet, and good oil sand at 5657-65 feet. A drill-stem test of eight minutes duration was made but the tool slipped in four minutes. Through ⅜-inch chokes, top and bottom, the test recovered 180 feet of oil, little mud and 55 pounds pressure. The oil is 37 gravity. The test has been reamed down for a second test.

The Saxet Heights field, Nueces County, has its third producer in the new deep sand assured with Richardson Petroleum Company setting liner to 5205 feet in A. C. Erwin 1. The well is a 4000-foot east extension to the new deep sand and paves the way to a small-site drilling campaign. It found the sand at 5169-79 feet.

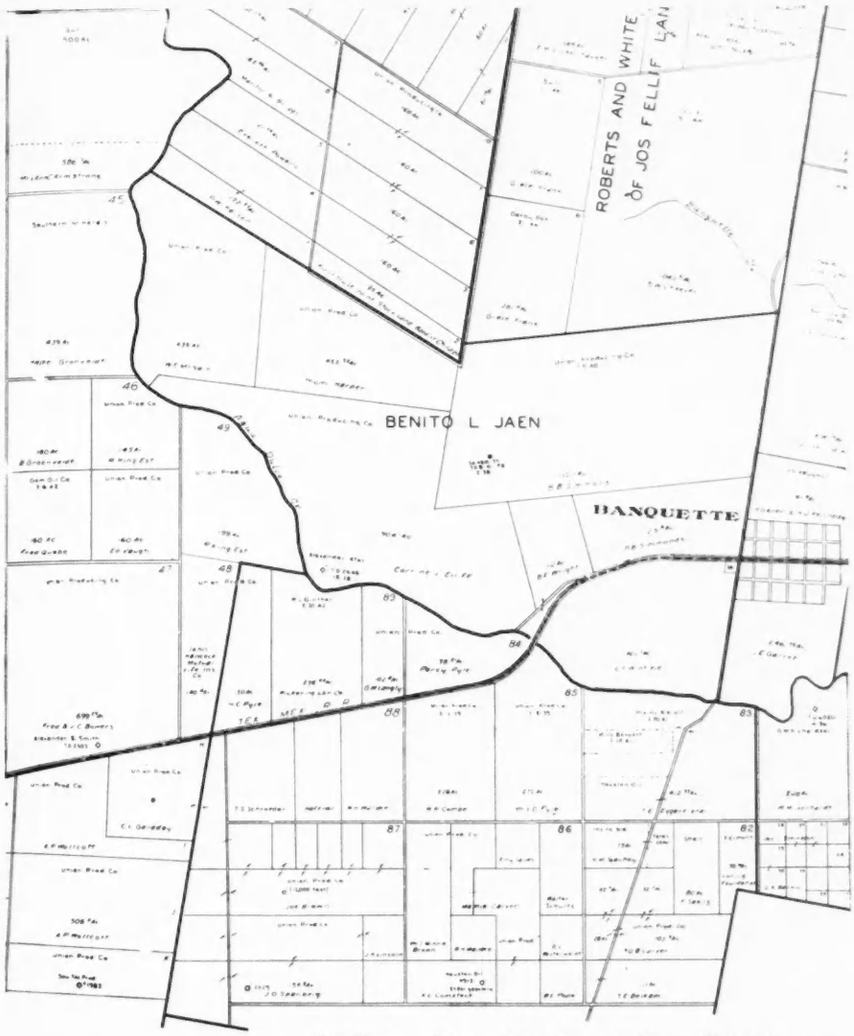
Starr County Vicksburg sand well being tested

Mission.—Transwestern Oil Corporation was preparing to gauge T. B. Slick School 1, discovery well of the new Vicksburg sand field in central Starr County. The well made a little distillate along with a large volume of gas after casing was perforated at 4212-30 feet with 18 shots. The test built up equalized pressures of 1700 pounds, flow being through 7/64-inch choke.

The new discovery drilled to 6862 feet, but plugged back to the sand logged at 4175-4262 feet. Elevation is 472 feet, derrick floor. The well, in Section 266, is the first to produce from the Vicksburg in this portion of South Texas.

In Hidalgo County, Atlantic Refining Company continues to produce American Rio Grande Land & Irrigation Company 1, discovery well of the Weslaco field. The test is flowing about 2½ barrels of 41.5 gravity distillate per hour and 8,500,000 cubic feet of gas per day through ⅜-inch choke, showing pressures of 2825 pounds on tubing and 2975 pounds on casing. The test is the deepest producer in South Texas, from perforations at 8634-42 feet.

Following the rearranging of affairs of the American Rio Grande Land and Irrigation Company and completion of a new lease deal covering some 5500 acres, Union Sulphur Company had



Map Courtesy Zingery Map Company, Corpus Christi, Texas.

Union Producing Company's efforts in western Nueces County have resulted in the discovery of a new field one mile west of Banquette, known as the North Agua Dulce field. It B. B. Simmons, which was drilled to 8710 feet, then plugged back to Frio sand at 4810-35 feet, where it made a gas well spraying oil. Two miles to the southwest, Union Producing Company's Brown 1, is drilling on a 12,000-foot contract, deepest well ever sunk in South Texas.

reentered the Mercedes field, Hidalgo County, with a development program. The newest 7500-foot project is American 12, 940 feet south of No. 6. This was the first field in South Texas to find production below 7000 feet.

Magnolia Petroleum Company was near 9000 feet in F. Armendiaz 1, deep Willacy County wildcat. In the same county, but near the Kenedy County line, Sal Vieja Oil Corporation's Garcia 2 was drilling at a shallow depth. It is in Share 59, about 1½ miles southeast of the first test.

Branyon production being extended

San Antonio.—Extension of production in the Branyon field, Caldwell County, was the outstanding happening of a quiet week in the Balcones Fault zone area. Topping the Austin chalk at 1873 feet, L. Owens and Van Wagnen's M. L. Smith 1 was drilling around 2000 feet with considerable oil showing. The test likely will set casing and complete at this level. It has an elevation of 416 feet, derrick floor.

This well is located in a 20-acre lease in the John Roe Survey, and is about 3000 feet southwest of the Branyon field. It is several thousand feet northeast of the Burdett Wells pool.

Two Pettus discovery wells being completed

Beeville.—Pettus district's two new oil fields in the Pettus sand were awaiting completion late in the week. Hantho-Nelson & James B. Chew's A. McNeill Bell, 7 miles west of Lagarto in Live Oak County, was ready for completion at 5076 feet. The test found shale and shells with oil odor at 5058-61 feet, sandy shale and shale with streaks of sand carrying an oil odor to 5073 feet, then sand to 5076 feet. Casing was landed at 5058 feet.

The well is 330 feet out of the west corner of the 30-acre lease in the A. Parks Survey and is 2900 feet northwest of Dirks Brothers' Dougherty 1, which drilled to 5404 feet in 1936, finding oil shows in the Government Wells sand, topped at 4503 feet and Pettus at 5115 feet. The new field is well split up among a number of companies, the largest holdings being Cities Service Oil Company, J. R. Dougherty, Union Producing Company, Magnolia Petroleum Company and others.

Over in Bee County, Dirks Brothers' Magnus Beck 1, one mile north of

SOUTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
CALDWELL COUNTY—		
M. and R. Dunavant 1, Williams sur	*	782
Murchison, Closuit & Reed, Jennings 5 (Luling)	400	2077
Ogden, Riddle 1 (West Dale)	*	2327
Philtop, Dorn 2 (Luling)	525	2103
GUADALUPE COUNTY—		
Kallison, Burris 1, Nash survey	*	3383
Robertson, Neighbors 1, Swift survey	*	2055
CORPUS CHRISTI DISTRICT		
BROOKS COUNTY—		
Standard of Texas, Garcia 4 (tr 3) (Alta Mesa)	400	2526
CALHOUN COUNTY—		
Humble & Plymouth, Welder 20-A (Heyser)	650	5475
COLORADO COUNTY—		
Coyle-Concord, Broussard 2, Hill-Dufner sur	*	6214
KARNES COUNTY—		
Luling, Boyce 19 (S. Burnell)	450	3675
Boyce 20 (S. Burnell)	500	3638
LIVE OAK COUNTY—		
Hagan & Stewart, Regan 1, Hely grant	*	1200
H. and H., Nichols 1, Henry survey	*	1750
NUECES COUNTY—		
Hilburn, Cody 3 (Saxet)	650	4174
Houston, Morgan 31 (Saxet) (perf 4065-69)	185	4557
Kepley, Donigan 11 (Saxet) (perf 4066-67)	380	4436
Renwar, McKinzie 1 (Turkey Creek)	650	5872
Seaboard, James Luby 10 (Luby)	650	5066
Shaffer 4 (Luby)	650	5070
Southern Minerals, Till 3 (Saxet)	250	4872
REFUGIO COUNTY—		
Hewitt & Dougherty, Lambert 64 (Tomoconnor-Greta)	1500	5939
Quintana, Bauer 6 (Tomoconnor) (perf 5754-62)	2550	5941
VICTORIA COUNTY—		
Barnsdall, McFaddin 3 (McFaddin)	400	4409
Magnolia, Lander 5 (Heyser)	325	5746
LAREDO DISTRICT		
DUVAL COUNTY—		
Benedum & Trees, Puig 10 (N. Sweden)	450	4837
Cox & Hamon, Cuellar 5 (Hoffman)	90	2568
Government Wells, Lundell 15 (Lundell)	290	1507
Hiawatha, Parr 7 (N. Sweden)	500	4750
Magnolia, Duval Ranch 15 (Piedre Lumbre)	225	2053
Ruiz 6 (Sarnosa)	*	2457
McCarthy, Placker 5 (N. Sweden)	650	5401
Navarro, Rossi B-2 (N. Sweden)	850	5369
Standard of Kansas, Rossi A-4 (N. Sweden)	¶15	3903
Walstad 5 (N. Sweden)	550	5361
JIM HOGG COUNTY—		
Smith & Hamill, Saunders 1, sec 9, share 3-A	*	3085
McMULLEN COUNTY—		
Jones, Ezzell F-2 (Ezzell)	*	1728
Rowan and Nichols, Rhode 2, sur 21	*	1730
Schimmel, Hagist 4 (Loma Alta)	100	2203
WEBB COUNTY—		
Brooks, Uzzell 1 (Killam-Oilton)	164	2202
Campbell & Killam, Thompson 3 (Killam-Oilton)	75	1974
Cox & Hamon, Wise 2 (Killam-Oilton)	175	2003
Wise 3 (Killam-Oilton)	275	1997
Killam, Garcia 34 (Killlam)	40	1993
Moore, Martin 5 (Oilton)	152	1896
Martin 6 (Oilton)	70	1893
Smith & Story, Haines 1, sur 234	*	1921
Walker, Neal 1, sur 1008	*	2010
ZAPATA COUNTY—		
Bob, Martinez 2, block 22	*	1005

*Failures; †Junked; ¶Million cu. ft. gas.

Normanna Townsite, was recompleting. The well topped Pettus sand at 4215 feet and drilled to 4273 feet, casing being landed on bottom. The casing was perforated at 4219-22 feet with 24 shots and made several million cubic feet of gas and sprayed several barrels of oil with a large volume of salt water through ⅛-inch choke, tubing pressure being 1100 pounds and casing pressure 1300 pounds. The water is believed to be channeling from the salt water sand below the oil zone. The water was found at 4228½-63 feet.

Benavides, Texas.—Standard Oil Company of Kansas' attempt to extend the second Cockfield sand of the North Sweden field, Duval County, to the northwest, failed when Mabel Rossi 13 showed salt water in sand at 5591-97 and 5600-03 feet. It was plugged back for completion at an upper level. The test is the second in the field to be carried to the lower zone.

Texas permits continue increasing

The Texas Railroad Commission last week granted permits for drilling 309 new wells in Texas, three more than were approved the previous week.

The East Texas field advanced to first place with 70 new locations, including 38 in Gregg County, 24 in Rusk, seven in Upshur and one in Smith County. Twelve locations were reported from the East Central Texas District.

West Texas operators were granted 34 permits, including 10 in Ector County, while West Central Texas operators listed 17 permits including 10 in Shackelford County.

There were 61 new locations approved in the Gulf Coast area including 31 in Harris County, while 32 locations were reported from Southwest Texas with 11 in Duval County.

Operators in the North Texas District were granted 67 permits including 35 in Wichita County. Sixteen permits were approved in the Panhandle.

TEXAS GULF COAST

Prospects appear bright for field in Galveston Bay.

* * *

New field being opened north of Van Vleck in Matagorda.

Houston.—Standard Oil Company of Texas and Salt Dome Oil Corporation were making a production test on State 1 in Galveston Bay, Chambers County, last week. Operators went in the hole with screen and liner February 11 and were unable to obtain circulation because of a faulty back-pressure valve. The screen and liner were pulled and the valve repaired. At a late hour February 11 the pipe was back on bottom and Christmas Tree was being installed prior to washing. All officials of both companies are at the well and are expecting it to open a new field.

The well was drilled to 6030 feet in broken formation showing oil. Top of the formation was logged at 5835 feet. Seven-inch casing is set at 5955 feet with 450 sacks of cement. Sands to be tested are at 5956 to 5967 feet.

Pierce Estate's Fee 1, north of Van Vleck, I. & G. N. Survey, indicated last week that it would make some kind of a well and would open a new oil field in Matagorda County. A drill-stem test was made from 6615 to 6624 feet in 24 minutes through ¼ and ⅜-inch chokes and showed 200 feet of oily mud and 275 feet of drilling mud. A 50-pound working pressure was shown. Fifty percent of the oily mud was oil. This hole was drilled to 7374 feet in salt water sand, topped at 7370 feet. Sand showing oil was logged from 6620 to 6624 feet, odor of oil from 6632 to 6633 feet and sand with a salty taste from 6633 to 6639 feet. The hole was plugged back and sidetracked at 6250 feet. Pierce Estate owns nearly all the acreage in this area. The operators have made location for Paul Kruger 1, 466 feet southeast of the northwest line and 200 feet southwest of the northeast line of C. Warren Survey, Abstract 422, Matagorda County.

Cheek Wildcat Shows Oil and Water

At Cheek, Jefferson County, Glenn H. McCarthy made another production test on Broussard Trust 1, C. Hillibrandt Survey, last week. The potential field opener was making pipe line oil and then at intervals would make salt water. Cement was drilled out to 7725 feet and a drill-stem test from 7690 to 7725 feet showed a 50-pound pressure and 990 feet of oily mud. The well was washed in and showed 136 barrels of fluid through a 9/64-inch choke. Tubing pressure was 2215 pounds and casing pressure was 2700 pounds. While the well is flowing oil the flow lines become coated with ice, and then a slug of water comes through—some estimates were as high as 50 percent—the ice melts. The operators are letting the well flow to see how it will stand up.

Friendswood, Harris County, was extended 6200 feet north by Humble Oil & Refining Company's Pierce Estate 1, W. K. Smith Survey. It made 624 barrels of pipe line oil daily through a ¼-inch choke with a tubing pressure of 800 pounds and a casing pressure of 900 pounds. The 29.2 gravity oil was coming from sand which was perforated with 12 shots at 6034 to 6044 feet. Pierce 1 was drilled to 6050 feet and was completed several weeks ago but due to high gas/oil ratio is was plugged back. On the northwest side of Friendswood, Humble Oil & Refining Company's Gibson 1 made 23 barrels of pipe line oil per hour through a ¼-inch choke at 6042 feet.

Pearland prospect, Brazoria County, will be drilled within the next month. Sam Dunnam made location for Settegast 1, 2970 feet northeast of the southwest line and 2277 feet northwest of the southeast line of the Settegast 700-acre tract in the T. J. Green Survey. The wildcat will probably be drilled below 7000 feet.

Southeast of production at Dickinson, Humble Oil & Refining Company was abandoning Peters 1, J. W. Lytle Survey, Galveston County. Salt water was shown on two production tests. The first test was made at 8223 to 8244 feet. It showed

(see opposite page)
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a tubing and casing pressure of 800 pounds. The hole was plugged back and casing was perforated from 8052 to 8057 feet with 50 shots. Salt water was recovered and a 900-pound tubing pressure was shown. The hole is bottomed at 9355 feet in salt water sand which was topped at 9340 feet.

North of Crosby, Harris County, Humble Oil & Refining Company was down to 6967 feet in shale last week in Rohlf 1, J. Sellers Survey. The well is reported to have cored salt water sands in Frio formation. The wildcat will be drilled to 8000 feet. It is running about 100 feet higher than normal.

Northeast of Nome, Jefferson County, Humble Oil & Refining Company abandoned location for Garth Land 1, S. Horton Survey and have moved rig to B. H. Willis 1, 466 feet out of the southeast corner of 176-acre tract in the J. Vannes Survey, north of Nome.

On the southwest side of Silsbee, Hardin County, Republic Production Company made a drill-stem test on Ellery 2, J. Ellery Survey, and was setting casing at 6967 feet. The test was made from 6957 to 6967 feet and showed 480 feet of pipe line oil.

In the Wilson Creek area, Matagorda County, southwest of Buckeye field, United North & South Development cored oil sand from 7894 to 7900 feet in Lambert 1. The operators are going in the hole for another core before making a test. This is a new sand for this side of the field.

TEXAS GULF COAST
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
AMELIA—		
Humble, Guinn 11	648	6779
ANAHUAC—		
Humble, Johnson 18-X	480	7100
Tyrell 22	576	7085
BARBERS HILL—		
Stanolind, Chambers County 10 (wo)	18	4572
FRIENDSWOOD—		
Humble, Gibson 1	552	6042
Jones 1	576	6041
Pierce 1	624	6044
HARDIN—		
Atlantic, McMurtry 1-A	567	7656
Sun, Cessna 1	95	7544
L. W. Wicks, Tullos 1	601	7634
GARWOOD—		
Texas Crusader, Hancock & Broussard 1	*	6214
HASTINGS—		
Humble, McDeed 6	624	6080
Stanolind, Lieberman 1	580	6080
HUMBLE—		
A. W. Crosby, Brazo Oil Co. 9-A	318	1310
NOME—		
Sun, Long-Maubles 2 (wo)	104	6050
PICKETT RIDGE—		
Great Plains Oil Co., Bichkin-Myers 2	120	4591
PIERCE JUNCTION—		
Gulf, Taylor 43	200	3650
SEGNO—		
Gulf, Wing 9	312	5190
SPURGER—		
Republic, Hurd 7	500	7710
THOMPSON—		
Maylor and Decosta, Gehr 3	141	5399
TOMBALL—		
Humble, Carroll 1	530	5577
Didion 1	*	5588
Voight 1	456	5593
VAN VLECK—		
Skelly Oil Co., Cobb B-14, dr to 11,465 ft, pb and comp	709	7496
WEST COLUMBIA—		
Texas Co., Smith 3	334	5576
WITHERS—		
Texas Co., Pierce Estate C-43	295	5547

*Failures; †Junked; ¶Million cu. ft. gas.

Corpus Christi hearing

Opposition to deepening wells completed with small casing in the Corpus Christi field was voiced by officials of the Texas Railroad Commission at a hearing held in Austin last week. Discovery of a deep pay sand in the field has lead these officials to expect that operators will seek to deepen their wells if the lower sand proves productive.

A survey of the area indicated that approximately half of the 210 producing wells in the field have 5½-inch pipe for an oil string. The Commission recently issued an order for deepening wells which had oil strings smaller than 7-inch.

At the hearing Laten Stanberry, Chief Supervisor of oil and gas for the Commission pointed out that with the small casing, the withdrawal of the drill pipe would produce a swabbing action which might have the effect of pulling a well in, as well as the danger of knocking a hole in the original casing. Most operators present agreed that this was true, although some insisted that they would be able to deepen their wells without any unnecessary hazard.

British American sales increase

J. C. Millar, treasurer of British American Oil Company, Ltd., reports sales of the company's products to be higher in 1937 than during any other year. The company participated actively in the development of the Turner Valley field of Alberta, Canada, and its refineries operated beyond normal capacity, resulting in plans for additions to refinery capacity during the present year. Wells of the company's United States subsidiary produced more crude than during the previous year.

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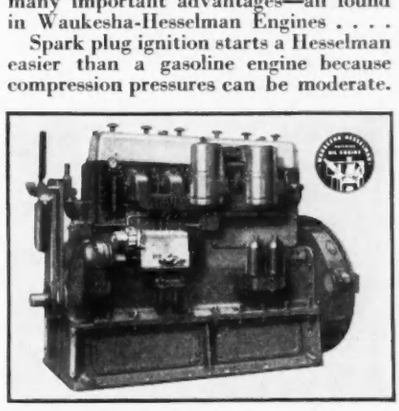

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WAUKESHA ENGINES

Villa Platte production extended half mile southwest.

* * *

Cameron Parish off-shore test attempts gas blowout.

Lake Charles.—Villa Platte, Evangeline Parish, was extended a half mile southwest last week when Continental Oil Company's Louisiana Land Improvement Company 1, Section 46-3s-2e, came in flowing 278 barrels of 41 gravity oil in 13 hours through a 3/16-inch choke from Sparta formation at 9040 feet. Tubing pressure was 1600 pounds and casing pressure was 1700 pounds. This is the second well drilled at Villa Platte and proves that the area is of major importance. The well was only 60 feet lower than the discovery. It topped the Sparta at 8645 feet, oil sand at 9017 feet and 7-inch casing was set at 9040 feet with 20 feet of slotted pipe set on bottom.

Continental Oil Company has announced two new locations at Villa Platte. P. McDaniels 1 is 2500 feet southeast along the south line of Section 44 from the west corner and 580 feet northeast at right angles in Section 44-3s-2e. Ed Tate 2 is 2917 feet southeast along the south line of Section 44 from the west corner and 1315 feet northeast at right angles in Section 44-3s-2e.

A new producing sand was discovered at Charenton, St. Mary Parish, last week by Pan American Production Company's Ecuer 1-A, Section 11-13s-9e, which came in making 350 barrels of pipe line oil daily from sands at 2620 to 2640 feet. Ecuer 1-A was drilled to 10,317 feet and after reaching that depth side wall samples at 2625 to 2640 feet showed good saturation. The hole was plugged back to 3400 feet and 7-inch casing was set at 2618 feet.

Gulf of Mexico Wildcat Attempts Blowout

One mile off shore of Cameron Parish, Superior Oil Company's State 1 was mixing heavier drilling mud at the end of the week. Last week the hole was cored to 9394 feet and mud returns from the bottom were gassy. The well started to kick and was shut in. State 1 is reported to have encountered some heaving shale up the hole.

At Sweet Lake, Cameron Parish, Pure Oil Company was fishing for part of testing equipment in Yount Lee 13, Section 13-12s-8w after attempting a drill-stem test of a deep sand. The hole was drilled to 8928 feet in shale. The hole bridged at 8650 feet and was plugged back to 8450 feet. Casing was perforated for 12 holes from 8375 to 8383 feet. A 26-minute drill-stem test was made through ¼-inch chokes with the seat at 8345 feet. The well showed a slight blow of gas, the testing tool was lost, and the test recovered 90 feet of mud and 250 feet of salt water.

In the Abbeville field, Vermilion Parish, Continental Oil Company, made location for Dr. Robert Young 1, 827 feet east of the west line and 250 feet north of the south line of the Young 56-acre tract in Section 66-12s-3e.

On the northeast side of Lafitte field, Jefferson Parish, The Texas Company was preparing to complete Marrero 1, Section 21-17s-24e. Marrero 1 was drilled to 10,275 feet in shale. After electrical test, 7-inch casing was set at 9731 feet. Broken formations showing oil was logged from 9550 to 9584 feet. Marrero 1 is a north offset to Bayou Norman 1. Last week the company completed L. L. E. Lafitte 9. It made 1318 barrels of pipe line oil daily at 10,065 feet. Location has been made for L. L. E. Lafitte 10 in Section 17-17s-24e. No dry holes have been drilled at Lafitte.

West of production at Bayou Des Allemands, St. Charles Parish, Amerada Petroleum Corporation and Louisiana Land & Exploration Company are preparing to test St. Charles Land Company 1 in a new sand. Casing has been perforated from 5545 to 5550 feet and a drill-stem test was being made at the end of the week. Last week the casing was perforated with 10 shots from 6783 to 6787 feet and test showed 66 stands of salt water in 15 minutes through a ¼-inch and ⅜-inch chokes. A cement plug was set from 5545 to 5600 feet.

One of the more interesting wildcats in South Louisiana is Shell Petroleum Corporation and Tide Water Associated Oil Company's Unit 1 at West Lake Verrett in St. Martin Parish. Last week the wildcat was down to 8150 feet in hard-packed sand with no shows. The wildcat has cored several hundred feet of hard-packed sand but it has contained no showings of oil or gas.

North of production at Lake Long, Lafourche Parish, Fohs Oil Company's State 3 has been plugged back from 11,347 feet, where water sand was logged, to 10,120 feet. At the end of the week the well was waiting on cement to set.

Humble Oil & Refining Company's F. Wurzlow 1, Section 6-19s-19e, Lirette area, Terrebonne Parish, will probably be drilled below 12,000 feet. Last week it was drilling below 11,140 feet in shale. The first well drilled in this area went below 12,000 feet and indicated it would produce oil. Union Producing Company made location for Fee 2 at Lirette. It is 979 feet west along the south line of Section 50 from the southeast corner, thence 1065 feet north at right angles in Section 5-19s-19e.

SOUTH LOUISIANA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CAMERON MEADOWS—		
Burton Sutton, School Land 21	540	4271
CHARENTON—		
Pan American, Ecuir B-1	185	1895
EAST HACKBERRY—		
Darrel Davis et al, Doiron 1	*	40
JENNINGS—		
Raiter & Foster, Cockrell 2	*	3908
LAFITTE—		
Texas Co., L. L. E. Lafitte 9	1318	10,065
LAKE WASHINGTON—		
Humble, Cockrell Moran 25	*	6485
LEEVILLE—		
Texas Co., L. L. E. Leeville 63	932	5695
NEW IBERIA—		
Canal Oil Co., Sabtier 2	*	3173
POTASH—		
Humble, Orleans Levee Board 32	*	679
STARKS—		
J. R. Turnbull, Industrial Lbr. Co. 3	48	2420
WEST HACKBERRY—		
Stanolind, State 53	105	5869
JEFFERSON PARISH—		
Triangle Oil Co., Carroll 1, n of New Orleans, 125-12s-11e	*	3752

*Failures; †Junked; ¶Million cu. ft. gas.

Socony-Vacuum orders two new tankers

Socony-Vacuum Oil Company, Incorporated, has awarded a contract to Bethlehem Shipbuilding Corporation, Limited, for the construction of two tankers, to be built at the Sparrows Point, Maryland, plant of the shipbuilding company. The contract involves an expenditure of close to $4,500,000.00.

The new vessels will be of Socony-Vacuum's design and are basically similar to the standard type which this company has been building since 1930. They will be of normal form, twin bulkhead type, constructed on the Bethlehem-Frear system. The interior of the structure will be electric welded.

By the adoption of electric welding and other new features, the deadweight is increased to 16,250 tons, which is considerably more than that of the tankers "Mobiloil" and "Mobilgas," commissioned early in 1937, which carry 15,515 tons deadweight.

The specifications for the new vessels call for American Bureau of Shipping and Lloyd's Register of Shipping highest classifications and include all the improvements and special requirements of the new governmental regulations. The quarters for officers and crew will be of fire proof construction with fire proof furniture and are arranged so that not more than two men will be berthed in one room.

The vessels will have an overall length of 501 feet 7½ inches, length between perpendiculars 487 feet, 6 inches, a moulded beam of 68 feet and a moulded depth of 37 feet, and will carry 16,250 tons deadweight on international freeboard draft of 30 feet, with a cargo carrying capacity of 5,600,000 U. S. gallons.

NORTH LOUISIANA

Two tests started on 220-mile Schuler trend prospect.

* * *

Lisbon has 168 producing wells, wants more allowable.

* * *

Initial work started on repressuring old Homer field.

Shreveport.—The play for Permian lime production along the southeast-northwest Schuler "trend" took on definite proportions of a drilling campaign last week, as two tests that will have an important bearing on this development were at critical stages and projects got under way for three others.

A possible shore-line condition along a 220-mile distance, parallelling the Ouachita River at distances varying from 1 to 60 miles, is getting this play across Columbia and Union Counties, Arkansas, and Union and Morehouse Parishes, Louisiana. This parallels approximately the basal Monroe Fault which extends southeast-northwest.

The coring of saturated Permian lime at 7659-64 feet in Kerrlynn Oil Company's Barnett 1, SE SW NE 14-17-20, Columbia County, Arkansas, midway between the Permian lime well at Buckner, in Section 8-16-22, and the Schuler field, Sections 17 and 18-18-17, which, however had hung pipe while running to bottom, climaxed this play.

Just east of this block, Standard Oil Company of Louisiana prepared to make location in Section 15-17-19, Columbia County, and James Kimbrough and associates announced plans to deepen E. O. Olds' Mary Dennis 1, NWc SE SW 4-17-21, from present depth of 4513 to 7750 feet, which should put it into Permian lime. A Permian lime test is also in the immediate offing in Township 18, Range 12, Union County, and location will be announced in a short time. Standard Oil Company of Louisiana will drill immediately on its block in Union Parish, Township 23 north, Ranges 1 and 2 west. Joe Modisett and Standard Oil Company of Louisiana's Frost Lumber Company 1, C NE SW 14-21n-1e, is installing heavier rig to deepen to 9100 feet from 7010 feet, it having topped lower Marine at 6161 feet, elevation 188 feet.

The test, however, that is at the critical stage in this "trend" on the Louisiana side is W. J. Furlong, Jr., and associates' E. M. Clarke 1, NW SE NE 10-20n-7e, Morehouse Parish, that was coring pink anhydrite and shale Thursday at 6044 feet in Lower Marine, and was believed to be just above top of the Permian lime; elevation is 103 feet.

Should a major field develop from a shore-line condition of the length mentioned, or several fields be found, facilities from the standpoint of movement of crude and crude products would be almost ideal. The Ouachita River is a navigable stream to Camden, Arkansas, and is controlled by locks, leading into the Mississippi River.

Lisbon Wants More Allowable

A movement was afoot last week among operators in the Lisbon field, Claiborne and Lincoln Parishes, that now has 168 producing wells, to seek an increased allowable to 15,000 barrels for that district for March. There was also reported to be considerable sentiment among some to ask for a 40-acre space rule for the field that now has a 20-acre space rule. The present daily allowable at Lisbon is 10,000 barrels.

Indications of a quarter-mile south extension of production were given at Lisbon last week when Delta Drilling Company's Wise & Tatum 1, C S½ NW NE 7-20n-4w, Lincoln Parish, which cored 10 feet of saturated basal Glen Rose oolitic lime. The first saturation was from 5325 to 5331 feet, with a shale break and then saturation from 5337 to 5341 feet. Casing was set; elevation is 262 feet. Three new locations were immediately made in this section, one in Section 6-20n-4w, two in Section 2-20n-5w, and four in Section 32-21n-4w, Claiborne Parish. J. W. Love is preparing to make location for a northwest outpost test, Mrs. Josephine Rudisal 1, NW NW 35-21n-5w. Another test southwest of production is expected soon in Section 16-20n-5w.

Only one new producer was completed at Lisbon last week, this being Vaughn and Marr's M. H. Eppinger 3, C S½ NW SW 29-21n-4w, completed flowing 45 barrels hourly through 16/64-inch choke after acidization with 5000 gallons. Total depth is 5125 feet; elevation is 240 feet.

Barber and Woods have completed their survey of a pipe line right-of-way from near Minden, Webster Parish, to the field, but have not definitely decided on location for the pump station in the field.

Three Cotton Valley Tests

Three Travis Peak tests in the Cotton Valley field, Webster Parish, two of which would mean considerable extensions, were being tested last week.

Meanwhile, effective at 7 a.m. February 7, the minerals division, Louisiana Conservation Commission, imposed its first proration on the three present oil producers from this horizon at Cotton Valley, when it reduced the per-well allowable to 300 barrels daily. Two of these wells had been completed since January 1 and the other, Ohio Oil Company's R. L. Holloway 6, NE SW 23-21n-10w, was completed in August, 1936, and since that time has produced considerably in excess of 250,000 barrels of oil. It has been averaging around 475 barrels recently.

Three fourths of a mile northeast of the nearest Travis Peak producer, H. L. Hunt's Hope 1, SW NW 24-21n-10w, Thursday was flowing half-barrel heads of oil about every 30 minutes as testing continued. Total depth is 5680 feet. Elevation is 198 feet. This test recov-

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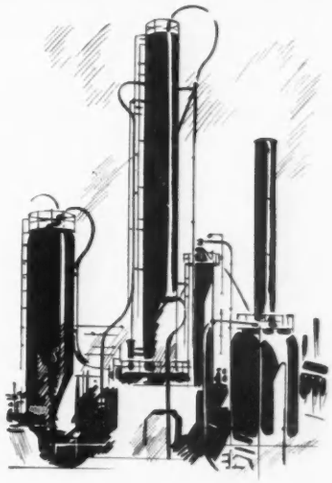

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ered 8 feet of saturated sand in a core from 5630 to 5642 feet and then cored shale to 5680 feet after which electrical logging device was run and casing cemented. Top of the Travis Peak (Holloway) sand was placed at 5632 feet.

A half-mile west of production in that horizon, North American Consolidated Oil Company's Stewart 1, C SE NE 32-21n-10w, with elevation of 242 feet, cored saturated Travis Peak from 5883 to 5893 feet, and set casing. Plugs were drilled Thursday preparatory to testing.

A. G. Oliphant's Sam Banks 2, C SE NW 34-21n-10w, also was testing at 5804 feet after logging 12 feet of saturation in the Travis Peak. It is a south offset to the same operator's A. J. Hodges 1 recently completed in this horizon.

Two miles southeast of production in the Lower Marine horizon below 8000 feet, Stanolind Oil & Gas Company's Pardee 1, C SW NE 36-21n-10w, was drilling below 5600 feet, after loggi first anhydrite at 4275 feet and massive at 4460 feet; elevation is 176 feet. It is checking favorably.

Sugar Creek Test Plugs Back

The third deepest test ever drilled in North Louisiana—or Arkansas—Standard of Louisiana and associates' Brownfield 2, C SE NW 5- 19n-5w, seeking the Permian lime in the Sugar Creek field, Claiborne Parish, was arranging to plug back to around 7200 feet last week after reaching 9964 feet in black shale, just 36 feet short of becoming the third test in this territory to reach 10,000 feet. Plugging back was necessary to straighten crooked hole found to be off 22 degrees.

Eight tests are drilling in the recently opened nose off the Dolet Hills part of the Bull Bayou-Naborton field, all in Section 7-11n-11w, where Petroleum Heat & Power Company recently completed a 105-barrel well in the Tokio.

Tested during the week, A. P. Barrett's Jal 1, NW NE SW 7-11n-11w, total depth 2809 feet, but it will be standardized as it refused to flow.

Arkansas-Louisiana Gas Company recently renewed leases around Section 35-12n-16w, DeSoto Parish, near Logansport, where a deep test has been rumored for several months.

Producers Oil and Gas Company (W. E. Hall) has secured more than 4000 acres of the block formerly held by McDowell and associates around Section 9-15n-10w, Bienville Parish, where a test was drilled to 2960 feet. Plans are to deepen old test to Glen Rose or drill a new operation to that horizon.

Rapid progress was made last week by The Texas Company in Claude Adams 1, Thomas Cox Survey, proposed 9000 foot test in the Bethany district, Panola County, Texas. The test Thursday was drilling at 3525 feet.

Repressuring at Homer

Tide Water Associated Oil Company has completed drilling of two key wells for repressuring the Nacatosh 1300-foot horizon in the Homer field, Claiborne Parish. The company has 18 stripper wells in this horizon in this field. Several years ago Standard Oil Company of Louisiana began a repressuring project in Homer but did not make it extensive.

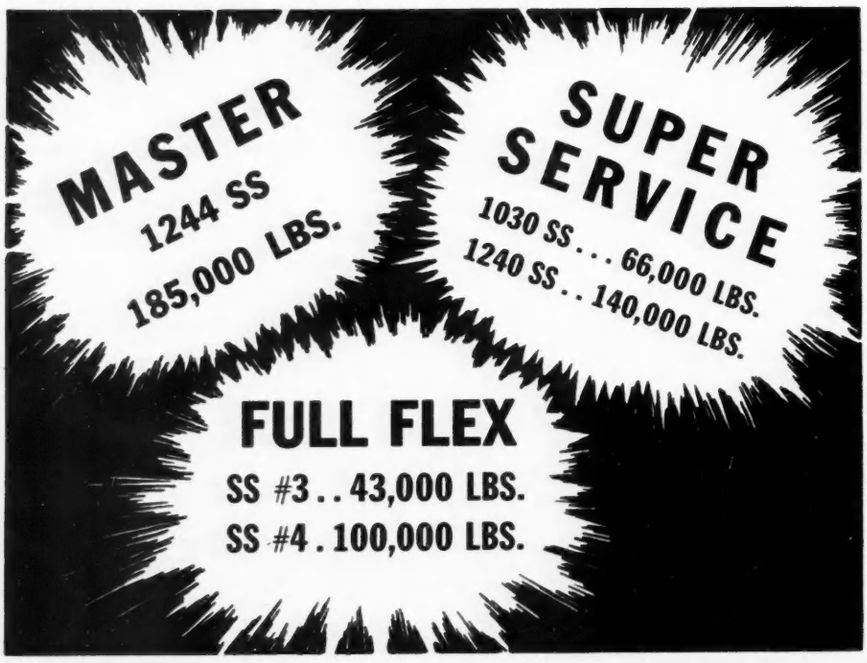
A successful repressuring of the Haynesville field producing from the Blossom sand at 2800 feet, was carried out several years ago by Ohio Oil Company, Gulf Refining Company and Reserve Petroleum Company, on an extensive scale, using 1 key well to each 9 wells in the project. The wells at Haynesville were drilled mathematically with 1 well in the center of each 10 acres.

Continental Oil Company is making selections from the large block of geophysical optioned land in Madison Parish, around two geophysical prospects, one around Section 38-16n-13e, and the other around the southeast part of Township 16 north, Range 12 east.

J. P. Flournoy is assembling a block in Caddo Parish southwest of Shreveport for a proposed 5500 foot test. Center of the block is around Section 9-16n-15w.

Thompson and associates of New Orleans, are assembling a 5000-acre block centering around McConnell Oil Company and associates' R. L. Gay 1, Section 16-6n-3w, Grant Parish, drilled last summer to 4026 feet. Plans are to deepen this test through the Wilcox and then drill another test.

Shreveport, Louisiana. — Thirty-one drilling permits were authorized last week by the minerals Division, Louisiana Conservation Commission of which 17 were in North Louisiana divided among the following parishes: Bossier, 1; Claiborne, 4 (all in Lisbon); Caddo, 1; Lincoln, 4 (all in Lisbon); Webster, 6, all in Cotton Valley; and Tensas, 1. The 14 in South Louisiana were divided among the following parishes: Ascension, 1; Acadia, 3; Calcasieu, 1; Iberia, 1; LaFayette, 1; St. Martin, 1; Terrebonne, 2; Plaquemines, 3; and Vermilion, 1.



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SOUTHEASTERN STATES

Mississippi drilling is projected deeper

Jackson, Miss.—Sun Oil Company and associates' Mrs. Kate Talley 4, SE NW 33-4n-15w, deep test on the Lamar County salt dome flank, continued to drill last week below 8460 feet. The test was in sandy shale and pyrites at 8405 feet; elevation is 374 feet.

To other tests now drilling in Mississippi expect to go at least 7000 feet. Black River Oil Company's Federal Land Bank 1, NE NE 11-15n-5e, Hinds County, not far from the recently discovered Edwards salt dome, was drilling at 6665 feet in Midway with facilities provided to go to at least 7000 feet.

In Perry County, Phillips Petroleum Company's J. J. Newman Lumber Company 1, SE SE SW 21-2n-10w, proposed 7500-foot test, was drilling sandy shale and streaks of lime at 6675 feet.

Location has been abandoned for Greene County Development Company's R. C. Lett 2, SE NW 6-21n-2e, Greene County Alabama, shut down for some time at 115 feet. It was 50 feet southeast of a former test.

ARKANSAS FIELDS

Columbia County showing possible new field.

* * *

Schuler oil is sweet or sour according to producing depth.

El Dorado, Ark.—Prospects of another Permian lime field in South Arkansas appeared bright last week when Kerr-Lynn Oil Company's Barnett 1, SE SW NE 14-17-20, Columbia County, which topped the Permian lime at 7618 feet, cored saturated lime from 7659 to 7664 feet, and arranged to set final string of casing; elevation is 321 feet.

The test previously had cored lime with strong sulphur odor from 7620 to 7639 feet and 1½ feet of porous brown lime with taste of gas just above 7649 feet.

This is a geophysical prospect and represents a high-relief type of structure while the Buckner field discovery in Section 8-16-22 of the same county was of low relief.

Kerr-Lynn Oil Company's test is almost on a direct line and about midway between the Buckner discovery well and the Schuler field in Sections 17 and 18-18-17, Union County, which has been found productive of oil in 16 wells in the lower Marine horizon, and has one gas-distillate producer in the top of the Permian lime.

In the same county plans were announced by Jimmy Kimbrough and associates to deepen E. O. Olds' Dennis 1, SE SW 4-17-21, to 7750 feet from present total depth of 4513 feet.

Two wells were added during the last week to bring the total number of lower Marine producing oil wells at Schuler to 16. Since the discovery by Edwin M. Jones last summer of oil production in the lower Marine at Schuler it has been the practice to class all the crude from this horizon as sour oil. However, it is now believed that all the wells above sub-sea depth of 7300 feet in this horizon will produce sweet oil while those below that level will produce sour crude. The displacement of sulphur water on the top of the structure is more complete than down dip, this being the cause. Later as the sweet wells get an increasing amount of sulphur water they will produce more sour crude.

Tidewater Associated Oil Company is reported to have deferred contemplated drilling, scheduled to start March 1, on its block around Section 22-15-19, Ouachita County. Shell Petroleum Corporation is reported checking this area with seismograph.

Heenan and Coe's recently started Waldrop 1, Section 4-13-31, Little River County, on a block of 4500 acres, will be a Glen Rose test and is playing for a supposed east-west fault.

R. N. Turnbow and J. R. Tolbert, believed to represent major companies, area leasing in Township 17, Range 17, and Township 16, Range 17, respectively, in Union County.

Trend Toward Louisiana

Standard Oil Company of Louisiana is expected to announce location at an early date for a Permian lime test in the southeast "trend" from the Schuler, Arkansas, field on its block in Township 23 north, Ranges 1 and 2 west, Union County. This test will be drilled regardless of the outcome of Frost Lumber Company 1, C NE SW 14-21n-1e, which is installing heavier rig to deepen to 9100 feet from present depth of 7010 feet.

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLAIBORNE PARISH (Lisbon)—		
Vaughn & Marr, Eppinger 3, 29-21n-4w	1100	5125
LA SALLE PARISH (Urania)—		
T. & J. Oil Co., Tullos 2, 15-10n-1e..	5	1523
LINCOLN PARISH (Wildcat)—		
Gigantic Oil Co., Sanderson 1, 30-18n-1w	*	179
NATCHITOCHES PARISH (Wildcat)—		
Raines et al, Allen Plant 1, 22-10n-9w	*	220
TENSAS PARISH (Wildcat)—		
H. M. Jones, Chicago Mill 2, 31-12n-10e	*	826
CADDO PARISH (Rodessa)—		
Union Prod. Co., Harris 5, 10-23n-16w	264	5940

*Failures; †Junked; ¶Million cu. ft. gas.

ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SALINE COUNTY—		
Duncan & Givens, Williams 1, 18-3-15	*	104
UNION COUNTY (Schuler)—		
Marine Oil Co., Fee 3, 17-18-17.....	800	7589
Phillips, National 1, 17-18-17.....	800	7607

*Failures; †Junked; ¶Million cu. ft. gas.

El Dorado, Ark.—Six drilling permits were authorized last week by the Arkansas Board of Conservation, as follows:

Cleveland County — Markwick-Olds' Aubrey Vance 1, 200 south and east NWc NW 18-11-11; Columbia County—Standard Oil Company of Louisiana, S. T. Crone 1, 660 south and east NWc NW SE 8-16-22; Union County—Marine Oil Company, Frances Miller 1, 330 north of south line east half Lot 1, NW 18-18-17; Edwin M. Jones, C. H. Murphy 2, 330 from south and east lines Lot 6, NW 19-18-17; Levi Rodgers 1, 330 from south and east lines SW SW 16-18-17; Murphy Land Company A-2, 430 from east line and 205 feet from south line NE NE 19-18-17.

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ROCKY MOUNTAIN FIELDS

Osage field activity picking up to pace crude demand.

* * *

Lance Creek operations interested in lower production.

Casper, Wyo.—Pointing to an increased activity for the year 1938 in the Osage oil field, in Weston County, northeastern Wyoming, operators in that field are rigging up equipment for 3 wells, the locations for which have just been released. The field is producing at near peak capacity at present, in an effort to build up stocks to working levels in preparation for the expected heavier demand for crude later in the year.

The wells which have been started are: H. D. Wiltse's 14, NW NW NE 17-46n-63w; Patterson Oil Company's 19, center south line SE SE 17-46n-63w, and Wyoming Oil & Gas Company (Charles F. Martens et al) 8, SW SW NW 24-46n-64w.

Production in the field during January reached 21,810 barrels while refiners took 17,000 barrels, resulting in an increase of 4810 barrels in the working stocks on hand in the field. A serious shortage of crude stocks in this field was noted at the beginning of the year as a result of the heavy demands of refiners, which exceeded field production for the final quarter of 1937 and lowered stocks to nearly an absolute minimum. The production from this field is taken mostly by local refiners served by truck routes directly from the field.

In the Lance Creek field, Niobrara County, Wyoming's second largest producing area, 5 active drilling wells are at work. One of the most important wells, C. L. Price's Lamb 1, NE NW NW 7-35n-65w, west extension test of the deep Leo pool, was last reported drilling below 4100 feet in the Sundance formation in which unofficial reports stated oil and gas showings were encountered. The well is one-half of a mile west of the Mackinnie Oil & Drilling Company's Thompson 2 which found prolific production in the Leo formation, second Minnelusa sand.

A top structure location in the Lance Creek field, Ohio Oil Company's Converse Sheep Company 8, CNW SE SW 32-36n-65w, is drilling below 4843 feet in the Converse (Upper Minnelusa) horizon. Objective of the well is the Leo sand (Lower Minnelusa), which has not as yet been tested this far up on the structure. It found gas in the basal Sundance sand, main producing horizon of the field.

Continental Oil Company's Dielman 3-A, SE SE SW 5-35n-65w, latest start in the field, outpost location on the southeast edge of the producing area, is making hole at 1450 feet in shale beds according to latest reports. This well is just outside the recently defined participating area of the Sundance Unit area. The same company's Apex 1 Account 3, SE SE NE 34-36n-65w, in the eastern sector of the field, is drilling in sandy shale beds at 4069 feet. Well is drilling by tools lost in old hole at 5479 feet in the Minnelusa series.

Argo Oil Corporation's Ford 6, SW NW 33-36n-65w, just within the unit area of the Lance Creek Sundance pool, is down 3438 feet and drilling. The well offsets the company's Ford 6 location which found water in the Sundance sand and completed for 174 barrels initial in the Leo horizon.

Ready for completion this week is Sinclair-Wyoming Oil Company's Lost Soldier 77, SE NE NE 10-26n-90w, in the Lost Soldier field, Sweetwater County, southwestern Wyoming. Well is bottomed in the Tensleep producing horizon for the field and shot with 100 quarts of nitroglycerine. While preparing to clean out and test the 7-inch casing string collapsed at 2720 feet, making it necessary to wait on expander to straighten out pipe and continue test. Well made good showings on drill-stem test a little over a week ago.

Rocky Mountain Drilling Company ran a final test on its Osborne 1, SE SE SE 12-18n-104w, in the Middle Baxter Basin field, Sweetwater County, Wyoming, this week and placed the well on production rated at 3,000,000 cubic feet of gas per day from the Dakota formation at 2790 feet. The company's Betty Hoyt, CSW SW SW 32-19n-103w, was abandoned after failing to find commercial gas shows to 3020 feet, below the Dakota objective sand.

Mountain Fuel Supply Company's Agnes Fay, CE NE SE 18-18n-103w, in the Middle Baxter Basin field, is waiting on cement to set after re-cementing 10-inch casing at 1840-1910 feet. This well found good gas shows in the Frontier and is drilling to test the Dakotas, main gas horizon for the field.

Steady progress in the jointly operated Big Medicnie Bow field, Carbon County, southern Wyoming, is reported for the week. Ohio Oil Company and California Company's William Kyle 4-A, NE NE 26-21n-79w, drilled into the Wall Creek sand at 4130 feet and is drilling at 5430 feet. Objective of the well is the Sundance sand which is generally encountered at around 5600 feet in this field. The company's Union Pacific-Johnson 6, SW SE 23-21n-79w, is drilling at 5164 feet. It reported the top of the Muddy sand at 4975 feet.

Circulation was lost at 275 feet this week in Ohio Oil Company's Harrison-Cooper 14, CSE NW SW 35-20n-78w, in the Rock River field, Carbon County, Wyoming, and well is shut down at this depth waiting on cement to set after sealing off the formation breaks in an effort to restore circulation.

Stanolind Oil & Gas Company is testing production in its deep Tensleep wells in the Salt Creek field, Natrona County, central Wyoming. The wells have all been drilled through the Tensleep horizon and casing set on bottom of the hole. The pipe is perforated opposite the Tensleep sand at 10 foot intervals to enable operators to determine the water level and best productive level of the deep sand of the field. Average depth of the top of the Tensleep sands in the field is 4000 feet.

Wichita.—An order issued by the Kansas Corporation Commission last week, showing assessment of cost of investigations and hearing on the Otis oil and gas pool of Rush and Barton counties, placed the total cost at $2041. The cost was divided, with 50 percent of the amount being assessed purchasers of gas and 50 percent from producers of gas and oil. Oil producers were assessed on a basis of the volume of gas produced with oil as determined by the lowest respective oil-gas ratio, or other competent evidence of gas waste as determined by the commission's investigation.

MOUNTAIN STATES
Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
TOOLE COUNTY (Kevin-Sunburst)—		
Big West Oil Co., Gunderson 5, sw ne nw 19-35n-2w	200	1641

WYOMING

Company, Well and Location	Init. Prod. Bbls.	Depth
CARBON COUNTY (Rock River)—		
Ohio, Harrison-Cooper 13, sw se sw 35-20n-78w	80	3157
SWEETWATER COUNTY (Middle Baxter)—		
Mountain Fuel Supply Co., Lauzer 1, cnw nw nw 30-18n-103w	¶2	1859

*Failures; †Junked; ¶Million cu. ft. gas.

NEW MEXICO
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CHAVES COUNTY—		
Matthewson et al, McDonald 1, c ne nw 19-15s-27e	*	1407
CURRY COUNTY—		
Bond-Harrison et al, Hart 1, c nw se 13-2n-31e	*	3258
EDDY COUNTY—		
Nicholas et al, Johnson 1-X, sw ne 35-16s-31e	303	3940
LEA COUNTY (Eunice)—		
Phillips, State-New 1, c e½ ne ne 26-20s-36e	3000	3850
Shell-Devonian, L. Christmas 3, c sw ne 21-22s-36e	*	3855
LEA COUNTY (Hardy)—		
Stanolind, Hill 1-A, lot 10, 6-21s-37e	175	3787
LEA COUNTY (Langlie)—		
Culbertson & Irwin, Humphrey 4-A, se nw 3-25s-37e	134	3463
LEA COUNTY (Lynn)—		
Gulf, State-Janda 2-E, nw ne ne 21-23s-36e	2000	3690
LEA COUNTY (Penrose)—		
Danglade & Clower, Clifton 1, c sw sw 4-22s-37e	111	3710
Shell, Grizzell 1, c nw se 8-22s-37e	804	3718
LEA COUNTY (Vacuum)—		
Magnolia, State-Bridges 3, c sw se 23-17s-34e	295	4551
Phillips, State-C. P. Hale 1, c ne se 35-17s-34e	1032	4500
LEA COUNTY (Wildcat)—		
W. L. Todd, Tr.-Dalport Oil Corp., M. F. Leonard 1, c se nw 20-26s-38e	*	3706

*Failures; †Junked; ¶Million cu. ft. gas.

New field promised eastern Lea County.

* * *

New Mexico operations continue to gain.

Hobbs, New Mexico.—Development of oil production on the east border of Lea County and opposite the northwest corner of Andrews County, Texas, appeared promising the past week on a federal permit. Continental Oil Company et al's H. E. Marsh 1-A-31, C NE SE 31-20s-39e, revived interest in the area when a small amount of free oil was recovered with 200 feet of drilling fluid when formation tester was used at 4284-4328 feet. Previously a core pulled at 4294-97 feet carried oil stain. Hole was deepened to 4346 feet, and further testing deferred to cement 5½-inch pipe at 4022 feet. This wildcat logged top of anhydrite at 1620 feet, and base of salt at 2740 feet, with an elevation of 3571 feet, indicating a higher structural position than Jim Brown and Reynolds' Parcell-Conoco 1, situated 2½ miles due south. The latter was completed last year as a small pumper after plugging back to 4391 feet, but is not rated as a commercial well.

Lea County registered 6 new operations the past week, making a total of 42 tests within a period of 4 weeks. The Hardy sandy-lime area accounted for 3 of the new projects, while one each were credited to the Vacuum, Langlie and Cooper fields.

West extension for the Vacuum field is being sought by Magnolia Petroleum Company in starting operations on State 1-J, C NE SE 22-17s-34e. Location is half mile northwest of the company's State-Bridges 3, C SW SE 23-17s-34e, which was listed as a completion the past week, flowing 295 barrels of 38 gravity oil natural through open tubing from broken lime at 4461-4551 feet. Hole is bottomed at 523 feet sub-sea. Amerada Petroleum Corporation owns lease on 160-acre tract between the above tests, and will offset the producer shortly.

Vacuum area is the only Lea County oil field without a pipe line outlet. Production from the 8 completed wells, currently prorated to 63 barrels daily, is being stored in an 80,000-barrel tank provided by Magnolia Petroleum Company until a line connection is available. Four additional tests, all offsetting production, are slated to be completed within 10 days. Each of these will require the drilling of from one to 3 offsets.

Quality of the oil produced in the Vacuum field is rated as the best found in the Permian lime in Lea County. Initial yield of the wells has been on a par with other lime areas. Magnolia Petroleum Company and The Texas Company are the largest lease owners, but adequate small tracts are held by others to cause competitive drilling. Magnolia Petroleum Company has moved a third rotary rig into the field, and may need more outfits to keep abreast of offsets.

Cable tools have been installed by The Texas Company to drill cement plugs and deepen M. A. Corbin 1, C NW SW 10-18s-33e, wildcat situated 8½ miles west by south of production in the Vacuum field. First oil show in lime was logged at 3786-98 feet, with an elevation of 3984 feet. Pipe was cemented at 4021 feet.

Reduction of proration allowable of Lea County wells to 63 barrels daily in areas that are restricted on a flat basis has caused one major to resort to oil payments in financing future drilling obligations. This concern is credited with having made contract with a substantial rotary firm for the drilling of a group of tests on a turnkey basis. Contractor receives a bonus of 7½ percent above the current cost of a fully equipped well, and is assigned three-fourths of the net production of each well drilled, according to reports, until the cost is amortized. The unpaid balance nets the contractor 5 percent interest.

Southeast corner of Lea County was definitely eliminated as prospective oil and gas production territory when Warren L. Todd, trustee's Leonard 1, C SE NW 29-26s-38e, checked low on structure and quit in salt water sand at 3706 feet, with an elevation of 2994 feet. Production was expected near the 3200-foot section, which proved to be mostly shale.

North portion of the Cooper field gained a new operation when Kan-Mex Oil Corporation's Vaughan-Conoco 2-B-3, NWc 3-24s-36e, offset previously completed wells.

Sun Oil Company has awarded contract for the drilling of I. R. Stuart 4, C SE NE 15-25s-37e, offsetting production in the Langlie sandy-lime area. This company's Lanehart 2, near the southwest edge of the area, flowed 15 barrels oil in 16 hours after fourth nitro shot at plugged back depth of 3325 feet.

In the Hardy area, Skelly Oil Company has made location for E. C. Hill 2, Lot 2, 6-21s-37e, and State 1-K, NE NE NW 32-21s-37e, both offset producers. Danglade and Clower have made location for M. Currie-Gulf 1, NE NE SW 6-21s-37e, situated on a lease farmed out by Gulf Oil Corporation.

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IMPORTANT WILDCAT TESTS

CALIFORNIA

FRESNO COUNTY

CLOVIS—Central Valley Oil Co.'s No. 1, 1-12-20, dr shale 563 ft.

JACALITOS CREEK—Dauphin Dev. Co.'s Boone 1, 20-21-14, dr shale 3776 ft, showing sulphur water.

PANOCHE—J. C. Gautier's Hubbard 1, 12-14-11, sd 510 ft.

JACALITOS HILLS—Jacalitos Pet. Co.'s Assoc. 1, 14-21-15, td 562 ft, redr at 4558 ft.

GUIJARRAL HILLS—Petroleum Securities Co.'s Gatchell 2, 18-20-16, dr hard shale 5248 ft, fair cut 5109 to 5111 ft.

HURON—Pure Oil Co.'s S. P. 1, 31-18-17, td 10,393 ft, fsh.

COALINGA—Shell Oil Co.'s No. 1-36, 36-19-14, dk. John F. Wilcox's No. 6, 11-20-14, sd 300 ft.

CIERVO—Superior Oil Co.'s No. 1, 20-16-13, dr shale 3586 ft.

TRANQUILITY—Union Oil Co.'s Nicholson 1, 17-15-15, td 7062 ft, in sand and shale, top Dominguez zone 6970 ft, abn.

CANTUA CREEK—Western Gulf Oil Co.'s S.P.L. 4, 3-17-15, td 6754 ft, sandy shale, abn.

KERN COUNTY

MARICOPA—Frank Abbott's No. 1, 20-11-23, td 1730 ft, to deepen, formerly Lewis Prod. Co.

MIDWAY-SUNSET—American Empire Oil Co.'s No. 1, 20-31-24, sd.

DEVIL'S DEN—Amerada Pet. Corp.'s Beer 5, 22-26-19, td 6717 ft, cutting and pulling dr pipe. Den Pet. Co.'s Bates 1, 20-25-19, sd 4716 ft. Gibson Oil Co.'s Alferitz 3, 14-25-28, spud 1/31, dr. Little Major Oil Co.'s Jester 1, 36-25-18, sd 140 ft.

CUYAMA VALLEY—Calif. Prod. Co.'s Job 1, 6-10-24, dr shale 1163 ft.

FRUITVALE—Calif. Prod. Co.'s K. C. L. 1, 14-29-27, td 3521 ft, ran 120 ft 6⅝ in liner including 114 ft perforated. Showed good for 200 bbls clean oil. Shell Oil Co.'s No. A-58, 29-29-27, dr sandy shale 3620 ft.

MOUNT POSO—Carter Oil Co.'s No. 2, 3-27-28, td 1475 ft, tested wet, to recement; No. 3, rig.

BELRIDGE—Chico-Martinez Oil Co.'s Exeter 1, 1-29-20, td 1066 ft, plug 1026 ft, wocs. Wallace Taylor's F. K. Land Co.'s 1, 12-29-21, rur. General Pet. Corp.'s St. Helens' 1, 12-28-20, dr shale 7285 ft.

ROUND MOUNTAIN—Coast Explor. Co.'s No. 1, 6-28-29, dr shale 1550 ft. Richfield Oil Corp.'s Olcese 1, 17-28-29, td 1591 ft, plug 1123 ft, redr at 1180 ft. Shell Oil Co.'s Lilly 2, 21-28-29, td 1905 ft, plug 1597 ft, pumping 155 bbls 20 gravity oil, cutting 9 percent.

WASCO—Continental Oil Co.'s K. C. L. A-2, 8-27-24, dr hard shale 13,085 ft, (Feb. 8). Now deepest well in world, lost casing 7-in at 11,570 ft. Seaboard-Tide Water Associated's Cont.-K. C. L. C-1, 26-27-24, sd 10,213 ft.

ROSEDALE—Continental Oil Co.'s No. D-1, 10-30-26, dr shale 3426 ft.

ARVIN— General Pet. Corp.'s Pauley 1, 22-31-29, sd 500 ft. Union Oil Co.'s Berry 1, 16-31-29, rig.

McVAN—Golden Bear Oil Co.'s Siemon 3, 10-27-27, td 1503 ft, silty shale, abn.

GRAPEVINE—Honolulu Oil Corp.'s Honolulu-Associated 33-1, 33-12-19, dr shale 7675 ft. Petrol Corp.'s Reserve-Petrol 32-2, 32-11-19, dr brown shale 5128 ft. Universal Cons. Oil Co.'s Tejon 1, 33-11-19, td 4988 ft, plug 4670 ft; Tejon 2, lcn.

CALIENTE CREEK—Geo. W. Johnson's No. 1, 33-29-30, dr shale 975 ft.

McKITTRICK—Par-Mer Oil Co.'s Par-Mer 1, 6-31-22, td 2150 ft, rur to dr deeper. Rocima Oil Co.'s No. 1, 20-30-22, td 3186 ft, plug 1425 ft, 8⅝ in cemented 1220 ft, wet, to recement.

MOUNT POSO—Dr. M. Pottenger's Gerard 1, 3-26-28, td 1040 ft in green shale, abn; Orcier 1, 34-25-28, lcn. Ring Oil Co.'s K.C.L. 16-1, 16-26-28, spud 1/29, dr shale.

ARVIN—Petrex, Inc.'s No. 1, 32-31-30, td 3150 ft, placing heavier equip.

KERN FRONT—A. J. Rubenstein's Lillian Kelly 2, 20-28-27, td 3352 ft, wocs 8⅝ in at 3265 ft.

STRAND—Shell Oil Co.'s K.C.L. A-72, 14-30-25, td 8036 ft, redr at 7714 ft.

SAN EMIDIO—Shell Oil Co.'s No. 4-26, 26-11-22, dr shale 6992 ft.

TEN SECTION—Standard's K.C.L. 15-1, 27-30-26, td 8410 ft, plug 8072 ft, shut in.

SEMITROPIC—Standard's Randolph Com-2, 14-27-23, dr shale 9476 ft.

CALIENTE CREEK—Roy Stevens' No. 1, 33-30-30, lcn.

GREELEY AREA—Superior Oil Co.'s K. C. L. 9, 3-30-26, td 7870 ft, redr at 3153 ft.

SO. MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, dr shale 6816 ft.

KERN FRONT—Vernon & Wheedon's Robison 1, 28-28-27, sd 2540 ft.

MISCELLANEOUS

GLENN COUNTY—Ohio Oil Co.'s Williard 1, 18-20-2, td 4505 ft, died 1/28; Williard 1-A, rur.

KINGS COUNTY — Pyramid Prod. Co.'s Retherford 1, 27-24-18, dr shale 1740 ft.

MERCED COUNTY—Amerada Pet. Corp.'s Carano 1, 19-10-11, td 8385 ft, sandy shale, abn.

SAN JOAQUIN COUNTY—Standard's Weil Zuckerman 2, 25-2-4, dr gray shale 8040 ft.

SAN MATEO COUNTY—Wilshire Oil Co.'s Cowell 1 (Half Moon Bay), 20-6-5, dr shale 7086 ft, showing oil and gas.

SOLANA COUNTY — Amerada Pet. Co.'s McCormack 1, 1-3-2, dr shale 4326 ft.

SUTTER COUNTY—Buttes Oilfields' No. 3, 2-15-1, td 6950 ft, swabbed wet, plugged bottom, to test again.

TULARE COUNTY—Crusader Oil Co.'s No. 1, 1-24-27, rur. Magnet Oil Co.'s A. O. G. 3, 29-24-24, sd 7555 ft.

SANTA BARBARA COUNTY—General Pet. Corp.'s Erburu 18, 32-5-30, rig; Erburu 22, rig.

SANTA MARIA COUNTY—Union Oil Co.'s Squires 20, 27-9-34, dr shale and oil sand 4018 ft.

MONTEREY COUNTY—Amil A. Anderson's Hillman 1, 15-24-14, sd 4001 ft. Elba Oil Co.'s Elba 1, 6-12-1, sd 4021 ft; Elba 2, rig.

SAN LUIS OBISPO COUNTY—Ajax Pet. Co.'s No. 1, 27-26-13, rig. Cholame Synd.'s Jack 2, 10-25-15, sd 3641 ft. Little Cuyama Oil Co.'s No. 2, 4-10-26, dr shale 1091 ft. Loma Grande Oil Co.'s Leevi's 1, 28-31-13, rig. J. O. Martin's Pricco A-4, 5-32-13, td 4200 ft. Western Plains Oil Co.'s No. 1, 7-31-21, td 4010 ft, co. Vanguard Oil Co.'s Clark 1, 26-27-14, dr shale 4360 ft.

SANTA BARBARA COUNTY—E. C. Arnolds' Arnold-Apache 2, 8-8-33, td 6370 ft, pumping 50 bbls, 28 gravity oil, cut 50 percent. Carpinteria Oil Co.'s No. 1, 34-4-2, spud 1/27, dr. O. C. Field's Santa Rita 1, 11-7-33, td 3358 ft, co. C. B. Gautier's No. 17-1-A, 22-4-26, sd. Pima Oil Co.'s Morganti 1, 13-9-35, td 1782 ft, bailing. Standard's Los Flores Land 1, 27-9-33, dr shale 4396 ft. A. E. Tweedy's No. 1, 34-5-31, sd 1676 ft. United Western Oil Co.'s No. 1, 16-7-30, sd 2830 ft. Wilshire Oil Co.'s Hollister 1, 35-5-33, dr shale 631 ft.

VENTURA COUNTY—Joint test, General Pet. Corp., Honolulu, Richfield, Shell, Standard, etc., No. 1, 15-1-22, sd 3130 ft. Oxnard Oil Co.'s Vanoni 1 (Oxnard), 10-1-22, td 6302 ft, plug 6200 ft, sd. Richfield Oil Corp.'s McFarland 1, 13-2-2, sd 7883 ft. Texas Co.'s Edwards 1, 19-2-21, td 6111 ft, froze dr pipe.

SOUTHERN CALIFORNIA

WILMINGTON—Alford Dev. Co.'s Class. Yards 3, 22-4-13, sd 6250 ft, to drop from report.

PALMDALE—Antelope Valley Pet. Co.'s No. 1, 17-6-12, spud, sd.

NEWHALL—Barnsdall Oil Co.'s Rancho San Francisco 2, 26-4-17, td 6712 ft, tested good for 1660 bbls, oil, gas 800,000 cubic feet.

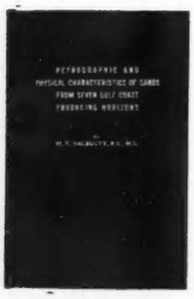
LA MIRADA—Camerrita Oil Co.'s Ravera 1, 21-3-11, rig.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, sd 2550 ft.

TICK CANYON—Mint Canyon Pet. Co.'s

PETROGRAPHIC AND PHYSICAL CHARACTERISTICS OF SANDS FROM SEVEN GULF COAST PRODUCING HORIZONS,

By M. T. HALBOUTY, B.S., M.S.,
Merit Oil Corp.



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BREA CANYON—Pressell, Parry & Tull, Thornhill's No. 1, 30-2-9, sd 4560 ft.

MONTEREY PARK—W. E. Ramsey's Garvey 1, 27-1-12, td 3507 ft, to deepen.

PALOS VERDES—Rolling Hills Pet. Co.'s P. V. 1, 27-4-14, dr shale 3886 ft.

CASTAIC—Royal Lands Corp.'s Ramona Hills 1, 8-4-17, sd 330 ft.

GARDENA—Texas Co.'s Gardena Com. 1, 30-3-13, dr shale 6911 ft, no showings.

NEWHALL — Townsley Canyon Oil Co.'s Hammond 1, 8-3-16, td 4102 ft, wocs 6⅝ in at 4000 ft.

SAN BERNARDINO COUNTY—Southern Counties Pet. Co.'s No. 1, 22-2-8, rig.

COLORADO

BOULDER COUNTY—J. B. Furstenberg's Foote 1, se 20-1n-70w, dr Niobrara shale 3860 ft.

CHEYENNE COUNTY—Gulf's Union Pacific-Larsen 1, cse nw 13-13s-49w, dr 4368 ft.

GRAND COUNTY—Interstate Oil & Refining Co.'s Hinman 1, ne se nw 11-2n-81w, dr 2685 ft.

PARK COUNTY—South Park Oil Co.'s Lemarr 1, ne ne se 34-11s-75w, dr at 5650 ft.

RIO BLANCO COUNTY—Texas Co. & California Co.'s Freman 1, cse nw 35-3n-94w, perforating 7-in. csg at 6640-6704 ft. to test Morrison formation. Csg set 6817 ft. Water Sundance td 6918 ft. pb.

ARKANSAS

CLAY COUNTY—Canadian American Oil Co.'s Smith 1, c ne nw 9-20-8, elev 375 ft, top Nacatosh 800 ft, sd 1005 ft shale.

CLEVELAND COUNTY—Marwick & Olds' Aubrey Vance 1, nw nw 18-11-11, mim.

CRITTENDEN COUNTY—Manning & Martin, Inc.'s Cartwright 1, se nw sw 16-7n-8e, dr 4230 ft sand and shale (no recent report).

COLUMBIA COUNTY—Kerrlynn Oil Co.'s Barnett 1, se sw ne 14-17-20, elev 321 ft, top Permian lime 7618 ft, cored lime sulphur odor 7630-39 ft, cored 7648-49 ft, taste of gas, hung drill pipe, cored saturated lime 7659-64 ft, running casg, td 7664 ft. Standard of La.'s Bodcaw Lbr. Co. 1, c se ne 18-16-22, dr 3490 ft. D. E. Thomas 1, c nw se 8-16-22, 13⅜ in csg 209 ft, dr 500 ft. E. O. Olds' Mary Dennis 1, se sw 4-17-21, owdd 4513 ft.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sd high water, td 2944 ft.

LA FAYETTE COUNTY (Buckner)—Lyons & Neely's Lillian Taubel 1 (Tatum fee), c se nw 18-16-22, top first anhydrite 3279 ft, top massive anhydrite 3298 ft, dr 5615 ft. L. E. Tennyson, Jr.'s Fee 1, sec nw ne ne 13-16-23, mim.

LITTLE RIVER COUNTY—Honan & Coe's W. D. Waldrop 1, woc 10-in surf csg J. G. Strahan et al's Dierks Lbr. Co. 1, sw se 21-12-28, dr 2032 ft lime and shale.

LONOKE COUNTY—J. W. Eddington et al's Anderson 1, nw ne 7-4-9, dk and mir.

MILLER COUNTY—F. F. Earles' General American 1, sec sw 20-14-26, rur.

OUACHITA COUNTY—A. H. Tarver et al's Mrs. Guy Smith 1, se ne sw 16-14-19, rur.

ALABAMA

CHOCTAW COUNTY—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, elev 120 ft, owdd, td 7520 ft.

GRENNE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, abn, td 115 ft.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, se nw sw 9-3n-29e, sd 4975 ft.

MOBILE COUNTY — Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, mim. J. C. Prine's King 2, ne ne 4-1n-4w, elev 135 ft, 10-in csg 300 ft, sd for 8-in csg 1100 ft (1100 ft s of No. 1).

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, pb to 2600 ft, temp abn, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, sd for more drill pipe, td 2620 ft.

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw ne se 19-4n-24e, elev 110 ft, cemtd off caving hole at 3935 ft, woc.

POLK COUNTY—Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk.

SUWANEE COUNTY—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, sd for heavier rig, 200 ft.

ILLINOIS

BOND COUNTY — Universal's Molden 1, nw nw nw 24-6n-4w, sd 2045 ft. Whitehead's Pollan 1, nw se sw 26-6n-2w, sd 2633 ft. McBride's Butler 1, nw sw se 30-4n-2w, fsg 830 ft. Gigall's Neillson 1, ne ne nw 32-5n-4w, lcn.

CLAY COUNTY—Shelby O&G Co.'s Nodacker 1, nw se sw 23-3n-7e, td 2933 ft, rur. Milnurn's Striegle 1, se nw ne 19-3n-8e, dk. Bonnie Oil Co.'s Schnautz 1, se sw ne 31-4n-8e, cor 3036 ft. Olson Drlg. Co.'s Irwin Est. 1, cn½ se nw 12-2n-7e, 149 bbls oil, 51 bbls wtr, comp. Wicklund's McCauley 1A, ne sw nw 7-2n-9e, dk. Campbell's Henderson 1, cn½ ne ne 7-4n-7e, c&p. Carter's Cox 1, ce¼ se sw 14-4n-5e, dk. Bonnie Oil Co.'s Walker 1, se se nw 21-4n-8e, mi rot.

CLINTON COUNTY—Dalton's Clifton 1, ne sw sw 15-1n-4w, dr 1300 ft. Ellzy's Williams 1, sw nw sw 1-3n-1w, dk. Schlosberg & Siegel's Monken 1, ne sw sw 4-2n-1w, fsg 1350 ft. Watkins & Wright's Wise 1, nw nw se 24-1n-3w, mim. Phelps' Gubser 1, cw½ w½ nw 4-3n-2w, td 1115 ft. Holley & Willis' Hughes 1, cn½ ne nw 18-3n-2w, dr 910 ft. Noll & Max Conrey's Barth 1, nw se sw 12-1n-1w, cor 1375 ft. Gross' Eversgerd 1, sw nw sw 22-1n-4w, td 950 ft, rng pipe. Adams O&G Co.'s Heirs 1, se se ne 13-1n-1w, td 1370 ft, to dr plugs. Lilly's Siegler 1, nw ne ne se 12-1n-1w, ru mach. Brookside Oil Co.'s Dodillet 1, sw sw nw 21-1n-1w, mi cable tools. Taxman Bros.' Hanseman 1, se nw ne 12-1n-1w, brr.

COLES COUNTY—Miller's Tomberlin 1, se se se 21-11n-10e, spd and sd. Hughes' Swango 1, csw ne 27-13n-9e, sd 903 ft. Stipes' Millage 1, cnl ne se 5-11n-10e, spd and sd.

CUMBERLAND COUNTY — Jolly-Hill Stipes' Jenkins 1, se ne ne 30-10n-9e, td 2130 ft. Kapschuell's Oakley 1, sw ne sw 34-10n-8e, mi rot tools. National Consumer's Vanderhuff 1, nw ne nw 19-9n-9e, mog.

EDWARDS COUNTY—Cotton & Laller's Hays 1, ne ne ne 4-1s-10e, lcn.

EFFINGHAM COUNTY—Kingwood & Carter's Bartel 1, ce½ ne nw 26-6n-5e, td 4102 ft, testing. Hollis' Haarman 1, nw se sw 32-8n-6e, td 2690 ft. Kingwood's McWhorter 1, ce¼ se nw 15-6n-6e, spd. Graham-Duncan's Richers 1, cn½ se nw 18-6n-7e, mirt.

FAYETTE COUNTY — Carter's Miller 1, cw½ nw nw 12-8n-3e, td 3170 ft, to pb. Farrely's Lilly 1, se sw se 16-8n-3e, ur 8-in csg. Wlson & Stokes' Fee 1, nw sw ne 14-8n-3e, lcn. Greer's Metzger 1, cn½ ne nw 19-5n-2e, spd and sd. Ryan & Redgraves' Jones 1, cs½ ne 24-9n-1e, cor 1448 ft.

FRANKLIN COUNTY—Markham's Whittington 1, ce½ sw se 18-5s-3e, abd 2939 ft. Washburn Pet. Corp.'s Neil 1, ce½ se se 6-5s-4e, dr 2200 ft. Conrey's Rea 1, ne ne nw 18-5s-2e, spd and sd.

GREENE COUNTY—Yeager's Robinson 1, se sw nw 17-10n-11w, td 2160 ft, prep to run 6-in csg.

HAMILTON COUNTY—Carpenter's Clark 1-A, nw nw sw 32-3s-5e, sd 2160 ft.

JACKSON COUNTY—Stanolind's Leiner 1, se se nw 20-7s-4w, dr 2531 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abondoned.*
bbls—*barrels.*
br—*building rig.*
b.s.—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

JASPER COUNTY—Obermeyer's Atkins 1, nw nw ne 3-6n-9e, sd for fuel. Siosi Oil Corp.'s King 1, sw nw nw 20-8n-10e, abd 4128 ft.

JEFFERSON COUNTY—Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, rur. Nollen & Benoist's Kelley 1, ne nw ne 25-4s-2e, lowering 6-in csg. Dee's Hamilton 1, ne sw nw 20-4s-3e, td 2911 ft. Sturbois & Tomberlin's Morris 1, nw nw sw 6-2s-2e, spd. Benedum & Trees' Owen 1, nw se sw 23-4s-3e, abd 3150 ft. Myers Bros.' Duckworth 1, ce½ sw ne 33-4s-4e, rig. Carpenter's Skinner 1, sw nw ne 36-4s-2e, brr. Dee & Foltz' Hamilton 2, sw sw nw 20-4s-3e, dk.

JERSEY COUNTY—Boyd's Wyman 1, nw se nw 32-7n-12w, sd 930 ft.

MARION COUNTY—Siegel & Schlosberg's Roddy 1, sw se sw 20-2n-3e, sd 2182 ft. Marion Oil Co.'s Wilson 1, ne ne se 18-3n-3e, so at 1475 ft. Hackman & Harris' Britt 1, nw nw nw 36-4n-1e, sd 1050 ft. Mahutske Oil Co.'s Nichols 1, se sw se 12-4n-4e, fsg 2875 ft. McBride's Clow 1, sw sw se 29-2n-1e, dr 1645 ft. Helmerich & Payne's Stephens 1, sw sw sw 35-3n-4e, dr 2705 ft. Dalton's Ira Dalton 1, nw se ne 19-1n-3e, dk. Oil Royalties' Suggs 1, csw nw nw 11-2n-1e, mim. Coyer's Mulvaney 1, se

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ne se 6-2n-4e, mim. Shedden's Eawlica 1, sw ne sw 33-2n-1e, lcn.

MASSAC COUNTY—Kahle's Harvick 1, sw sw sw 23-14s-3e, dr 2850 ft.

MONTGOMERY COUNTY—Cassidy's Nieman 1 (was Schlosberg & Siegel), cse sw 29-8n-5w, to dd to 925 ft. Myers' Klekamp 1, sw sw se 29-8n-5w, lcn.

POPE COUNTY—Whitlock's Anthis 1, nw nw ne 12-11s-5e, sd 1352 ft.

RANDOLPH COUNTY—Delaney & Mabee's Wilson 1, ce½ se ne 3-4s-5w, dr 3368 ft. Pioneer O&G Co.'s Johnie 1, se nw nw 28-6s-6w, sd 567 ft. Bremen's Wilson 1, se se se 22-6s-6w, lcn.

RICHLAND COUNTY — Mammoth's McCauley 1, sw se nw 28-3n-9e, co 3146 ft. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, dk. Parker's Berry 1, se sw ne 22-2n-14w, spd and sd. Papoose' Lynch 1, cne nw ne 5-3n-10e, cor 3005 ft. Bur-Kan's Allen 1, csw nw 27-4n-10e, td 3045 ft, to co and acidize. Miller & Ake's Schlichenmeyer 1, cne sw se 16-3n-10e, lcn. Trio Oil Co.'s Trueblood 1, sw sw sw 14-3n-11w, lcn abd. American Exploration's Johnson 1, cnw ne nw 29-4n-9e, dk. Gulf's Hill 1, cn½ sw nw 2-4n-10e, woc 242 ft. Martin's Everson 1, ne ne se 23-3n-9e, mirt.

SALINE COUNTY—Rogers' Saylor 1, se se se 3-10s-6e, td 1125 ft. Bolton's Beagle 1, nw nw ne 13-9s-7e, sd 1500 ft.

SCOTT COUNTY — Gregory & Mechling's Foltz 1, nw sw ne 31-14n-14w, sd 1196 ft.

SHELBY COUNTY—Breaseale's Richardson 1, cnw nw 35-12n-14w, sd 198 ft. Farrior's Fritz 1, ne ne ne 1-12n-2e, lcn.

WABASH COUNTY—Martin's Wood 1, ne se nw 31-1n-12w, co 2049 ft.

WARDS COUNTY—Schmidt's Strenne 1, ne nw ne 5-1n-14w, spd and sd. Leach Bros.' Lee 1, sw ne se 11-1s-10e, sd 2980 ft. Cotton's Leibke 1, ne ne sw 20-1n-14w, c&p. Cotton & Laller's Hays 1, ne ne ne 4-1n-10e, lcn.

WASHINGTON COUNTY—Silver's Paul 1, nw nw se 29-3s-5w, spd and sd. Bitterman's Jesse 1, cse ne 16-3s-2w, spd.

WAYNE COUNTY — Gordon's Taylor 1, cnw sw sw 15-1n-7e, mim. The Texas Co.'s Silverman 1, ce½ sw nw 16-3s-7e, I.P. 385 bbls oil 19 hrs and died, comp. Kenova's Bright 1, ne ne ne 21-1n-5e, sd, wo rot tools. Morrison's Gibbs 1, nw nw nw ne 14-1n-9e, dr 257 ft. Pure's Clay 2, cw½ ne nw 27-1n-7e, lcn.

WHITE COUNTY—Heldt's Dagley 1, sw ne sw 12-7s-9e, c&p. Hunt's Smith 1, 11-5s-8e, dk.

WILLIAMSON COUNTY—Snyder's Flemming 1, cse ne 9-10s-2e, mim.

KANSAS

BARBER COUNTY—Palmer Oil's Warwick 1, c nw 29-31s-10w, dr 600 ft. Kansan Oil's Mease 1, ne se se 27-30s-11w, abd 4910 ft. Carter and Wentz's Lytle 1, c ne nw 6-32s-14w, rur.

BARTON COUNTY—Price's Hammeke 1, ne ne sw 12-18s-12w, swb down and 1200 ft oih, overnight. Martin & Foraker's Dick 1, ne sw sw 31-19s-11w, mim & sd. Shell's Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 2800 ft oih. Day's Feltes 1, se se ne 14-16s-12w, sd 1875 ft. Sinclair Prairie's Oeser 1, ne ne se 17-16s-11w, set 5-in csg 3023 ft, woc. Texas' Lowry 1, c nl nw sw 2-17s-13w, dr 2605 ft. Murfin's Rexroot 1, nw nw se 14-17s-13w, lcn. Crown Pet.'s Schartz 1, sw se nw 7-20s-11w, rig. Price's Wondra 1, nw nw ne 10-17s-13w, cel.

BUTLER COUNTY—Steinbuchel's Fox 1, nw se ne 25-26s-3e, sd 1010 ft. Dustin's Miley 1, se nw ne 17-27s-5e, sd 395 ft. Saco, Kansas and Gulf's Pettit 1, sw nw sw 21-28s-6e, mim.

CHAUTAUQUA COUNTY — Harrison's Brown 1, ne se ne 19-34s-10e, sd 820 ft. Siegle's Temple 1, sw sw sw 31-32s-12e, sd 400 ft. Sooby's Davis 1, sw ne nw 29-33s-10e, sd 1504 ft.

CLARK COUNTY—Olson Oil's Lehman 1, se se sw 2-32s-21w, SSO 6480-81 ft; Watkins 1, sw sw nw 23-32s-21w, set 7-in csg 6798 ft, rust.

COWLEY COUNTY—Wakefield's Whitson 1, sw ne se 8-32s-4e, p 100 bbls oil & est 200 bbls wtr, 24 hrs, comp. Dickey's Kansas G&E Co. 1, ne ne ne 22-34s-3e, dr 3442 ft. Trees & Talbott's McMinn 1, ne ne nw 16-31s-6e, dr 2045 ft. Brewer's McDaniels 1, sw sw sw 24-30s-4e, cel. Palmer's Neimillar 1, ne ne ne 14-30s-4e, dr 1325 ft. Brewer's Clark 1, ne se nw 6-31s-4e, dr 1965 ft. Waefield's White 1, nw nw ne 4-33s-4e, ru.

EDWARDS COUNTY—Douglas & Gear's Meade 1, se se nw 35-25s-16w, sd.

ELLIS COUNTY—Reynolds' Karlin 1, nw nw nw 13-12s-18w, td 3682 ft, pot 917 bbls oil, comp. Skiles' Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Duwe & Farris' Hadley 1, se ne se 12-11s-18w, good sat 3136-46½ ft, rung 7-in csg. Bradley's Jensen 1, nw nw se 36-11s-19w, sho sulph wtr. Continental's Baumrucker 1, ne ne sw 25-14s-16w, dr 3030 ft. Helmerich & Payne's Stebbins 1, nw nw se 7-13s-20w, dr 3598 ft. Muth's Penny 1, cnl ne se 29-14s-18w, sd 350 ft. Witt & Sheridan's Hall 1, nw sw ne 1-12s-17w, lcn. Hays & Sackrider's Windholtz 1, ne ne ne 2-13s-16w, dr 2580 ft. Central Pet.'s Foster 1, csl se nw 33-11s-16w, rot rig.

ELLSWORTH COUNTY—Colonial's Hogy 1, nw nw sw 16-16s-10w, dr 3150 ft. Wixon's Peterman 1, sw sw sw 28-17s-10w, dr 2775 ft. Cities Service' Schroeder 1, cnl nw 29-17s-9w, pot 1321 bbls oil and no wtr, comp.

FINNEY COUNTY—Atlantic's Nunn 1, se se ne 27-21s-34w, rot rig.

GRAHAM COUNTY—Continental and Cities Service's Traxler 1, cel w½ ne 15-9s-21w, lcn.

GRAY COUNTY—Reynolds' Watkins 1, csw 32-28s-28w, rot rig.

GREENWOOD COUNTY — Whittaker & Johnson's Cannon 1, cel se nw 8-26s-13e, td 1504 ft, rung 5-in csg. Nichols' Central Life Ins. Co. 1, sw sw se 35-25s-12e, spd & sd.

HARPER COUNTY—Franklin Drlg.'s Walts 1, ne ne sw 24-34s-6w, dr 2632 ft.

HARVEY COUNTY—Nat'l Ref. Co.'s Brown 1, nw se ne 22-23s-2w, sd 3030 ft.

JACKSON COUNTY—Lemmick Oil's Marble Savings Bank 1, c ne ne 26-9s-14e, sd 510 ft.

JEWELL COUNTY — Hollingsworth Bros.' Wolfe 1, nw sw se 14-4s-8w, spd and sd.

LANE COUNTY—Phillips Pet.'s Kees 1, cse se 3-19s-30w, dr 4508 ft.

McPHERSON COUNTY—Pulse's Boesker 1, se se nw 29-20s-1w, rig. Carter's Hoglund 1, c w½ sw nw 8-17s-3w, td 3373 ft, pot 345 bbls oil & est 50 bbls wtr, comp. Phillips' Galle 1, nw nw ne 11-21s-2w, dr 3275 ft. Archer & Crane's Templin 1, nw sw se 32-17s-3w, co 2582 ft.

MEADE COUNTY—Pacific Mid-West's Rexford 1, ne se sw 8-30s-29w, sd 200 ft. Barnett's Adams 1, sw sw ne 22-34s-30w, rot rig.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, co 3265 ft. Marshall's Anderson 1, sw sw nw 23-16s-24w, spd & sd. Trojan's Moses 1, c sw nw 10-18s-25w, sd 500 ft.

OTTAWA COUNTY—Babcock Oil's Copeman 1, cnw ne 18-10s-2w, pits.

PRATT COUNTY—Cities Service and Atlantic's Delaney 1, csl ne 13-26s-12w, lcn.

RENO COUNTY—Schneider's Kroecker 1, ne ne ne 12-22s-5w, dr 3977 ft. Carey's McPheeters 1, ne ne nw 22-26s-8w, dr 3310 ft. Witt's Fair 1, nw se se 4-22s-8w, td 3346 ft, ru to dd. Cohen's Teter 1, se se sw 3-23s-5w, ru & sd. McCole's Mathews 1, sw nw nw 15-24s-10w, set 10-in csg 1955 ft, co. Skelly's Gorham 1, sw sw se 32-25s-10w, dr 3992 ft. Pulse's Payne 1, sw nw ne 4-22s-7w, dr 3630 ft. Cities Service's Kreie 1, c nw 27-23s-10w, rur.

RICE COUNTY—Skiles' Campbell 1, se se

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ne 28-19s-9w, reacid 750 gals, no increase. Price's Gemeinhardt 1, ne ne se 18-18s-10w, td 3306 ft, 1000 ft oih, 9 hrs. Herndon's Froning 1, nw nw nw 15-18s-8w, dr 2800 ft. Schneider's Sterling College 1, se sw se 28-20s-8w, rur.

ROOKS COUNTY—Producers' Ham 1, sw sw nw 25-7s-19w, sd 330 ft. Graham's Fike 1, sw sw sw 9-9s-17w, td 3339 ft, 2000 ft oih, 1400 ft wtr. Witt & Sheridan's Morrison 1, nw se sw 29-10s-17w, rot rig. Elwell's Zimmerman 1, ne ne nw 15-9s-18w, woc 345 ft. Duwe & Farris' Hancock 1, nw sw sw 21-10s-18w, rur.

RUSSELL COUNTY—Emrich's Anderson 1, ne se sw 33-15s-11w, spd & sd. Parks' Gorham Est. 1, sw nw ne 19-15s-15w, spd. Jones' Kuhnle 1, se se nw 4-15s-12w, ru. Hess' Reinhardt 1, ne ne sw 36-12s-14w, dr 1740 ft. Smith & Unruh's Stielow 1, nw nw nw 32-11s-14w, rig.

SEDGWICK COUNTY—Murfin's Martin 1, se se nw 18-28s-1e, swb 45 bbls oil, 24 hrs. Talbott's Downs Est. 1, se se nw 32-28s-2e, testing. Union O&R's Howell 1, sw sw sw 6-29s-1e, sd 2400 ft. Hudson's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. McKnabb's Garrett 1, se sw sw 18-29s-1e, dr 1400 ft. Steinbuchel's McAdams 1, sw sw ne 28-29s-1e, dr 3155 ft.

STAFFORD COUNTY—Hipple's Moses 1, nw nw sw 9-22s-13w, pb to 3635 ft, SSO 3617-21 ft. Terry & Feaster's Heggy 1, ne ne sw 26-33s-11w, co 3858 ft; Negley 1, sw sw ne 23-22s-12w, sd 3743 ft. Lindsay & Bailiere's Tiepermann 1, sw sw nw 32-22s-12w, dr 3663 ft. Cardinal & Carraker's Sittner 1, sw sw sw 4-22s-12w, td 3700 ft, swb 8 bbls oil and 12 bbls wtr, 4 hrs. Carter's Andress 1, c nl se 2-21s-13w, dr 3498 ft. Shaffer's Newell 1, ne ne se 20-24s-11w, dr 3945 ft. Stanolind's Walker 1, ne ne sw 33-21s-12w, td 3625 ft, rust. Carlock's Gates 1, se sw ne 34-22s-11w, dr 564 ft. Rust's Hullman 1, sw sw sw 5-22s-12w, dr 3200 ft. Knight's McNickle 1, se se ne 2-24s-11w, cel.. Nat'l Ref. Co.'s Bonham 1, sw sw se 28-25s-12w, set 12-in csg 315 ft, woc. Stanolind's Hahn 1, ne ne nw 14-22s-13w, brr. Hamilton's Hitz 1, ne ne nw 23-22s-13w, rot rig. Stanolind's Hill 1, ne ne sw 2-23s-12w, rur.

SUMNER COUNTY—Saco's Phipps 1, sw se ne 24-30s-1w, spd & sd. Jones' Stunkel 1, se se sw 2-30s-1w, rig. Shawver's Stewart 1, nw nw se 4-32s-3w, dr 2610 ft.

TREGO COUNTY—Carlock's Kinzel 1, sw sw sw 9-13s-22w, spd & sd.

WOODSON COUNTY—Reeser's Weide 1, nw nw se 18-25s-14e, sd 1150 ft. London & Mendenhall's Slough 1, ne ne sw 9-24s-13e, ru mach.

SOUTH LOUISIANA

operator's State 2-B, Vermilion Bay, 16s-5e, woc 6609 ft.

ACADIA PARISH—Humble's B. Finch 1, South Crowley area, 22-10s-1e, dr shale 7891 ft.

ALLEN PARISH—Humble's Bel 3, Bel prospect, 28-6s-7w, running liner 2733 ft.

CALCASIEU PARISH — Shell's Calcasieu National Bank 1, Hayes area, 18-11s-5w, fsh 7490 ft.

CAMERON PARISH — Humble's Miami Corp. 1-B, Little Cheniere area, 7-14s-6w, boulders 1798 ft. Superior's State 1, in Gulf of Mexico, 15s-8w, mixing mud 9394 ft.

IBERIA PARISH—Texas Co.'s Bayless & Jones 1, e flank of Jefferson Island dome, 48-12s-5e, mim; same operator's State 4, Fausse Point, 35-11s-8e, dr hard shale 7476 ft; same

JEFFERSON DAVIS PARISH—Union Sulphur's Calcasieu National Bank 1, Woodlawn area, 12-9s-8w, shut in 8288 ft.

LAFAYETTE PARISH—Continental's Foreman 1, Scott prospect, 36-9s-3e, dr shale 790 ft.

ST. BERNARD PARISH—Gulf's State RR 3, Lake Borgne area, 6-12s-15e, lcn.

ST. JAMES PARISH—Continental's Realty Operator's 1, Hester prospect, 17-12s-5e, ru.

ST. MARTIN PARISH—Carter & Stewart et al's Martin 2, Section 28 dome, 32-9s-7e, sd 2180 ft. Shell & Tide Water's Unit 1, w Lake Verret prospect, 11-14s-12e, coring hard sand 8141 ft. Texas Co.'s State 4, Lake Mongouloi area, 14-10s-9e, coring sand and lime 7177 ft.

TERREBONNE PARISH—Fohs' Buckley 1, Dulac area, 77-19s-17e, fsh 2090 ft; same operator's State 1, La Terre area, 41-19s-19e, dr shale 200 ft.

NORTH LOUISIANA

BIENVILLE PARISH—Gulf's Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, dr 7776 ft. Hunt-Seaboard's Hodge-Hunt 1, se nw 36-17n-6w, rur.

CADDO PARISH—Olsen Drlg. Co. et al's Sharpe 1, c nw ne 10-18n-16w, dr 2441 ft shale. A. D. Robinson et al's Dickson 1, 22-20n-14w, 5-3/16-in csg 2400 ft, ran electrical tester, td 2805 ft lime, setting short string of 4-in csg to perf at Tokio.

CATAHOULA PARISH—G. E. Foster et al's W. S. Peck 1, c s½ 39-10n-8e, 16-in csg 20 ft.

CLAIBORNE PARISH—Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, straightening crooked hole off 22 degrees, td 964 ft shale; Kilpatrick A-1, 11-19n-6w, dr 5610 ft.

CONCORDIA PARISH—Edw. A. Addey et al's Pasternach 1, c nw sw 49-8n-9w, setting csg 480 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s Woolums 1, nw nw 29-12n-12w, cored sand so, sd for csg, td 2694 ft. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, dk.

FRANKLIN PARISH—Southern Star Pet. Co.'s Grayson 2, sw ne 36-12n-6e, dr 980 ft.

LINCOLN PARISH—E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, running swabbing machine after shooting csg 5932-41 ft, td 6260 ft.

MADISON PARISH—Continental Oil Co.'s Singer Mfg. Co. 1, c ne ne 3-15n-11e, mim.

MOREHOUSE PARISH — W. J. Furlong, Jr. et al's E. M. Clark 1, 10-20n-7e, elev 103 ft, set csg to protect hole, coring 6024 ft, pink anhydrite (lower Marine).

NATCHITOCHES PARISH—Jos. E. Popkins' Peavy-Wilson 1, nwc 36-7n-9w, dk.

RED RIVER PARISH—Glassell & Whitehurst's LeLong 1, ne nw ne 25-12n-11w, building concrete cellar, td 1750 ft shale.

SABINE PARISH—J. C. Sutton Oil Co.'s Sabine Lbr. Co. 1, se nw ne 23-7n-14w, woc 9⅝ in csg 2132 ft (10,000 ft test).

TENSAS PARISH—Howard M. Jones' Chicago Mill & Lbr. Co. 2, c ne sw 31-12n-10e, top Cockfield 782 ft, dry, abn, td 826 ft. H. B. Schumacher's Mounds Land Co. 4, 39-11n-12e, lcn.

UNION PARISH—Joe Modisett et al's Frost 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, 9⅝ in csg 4358 ft, top lower Marine 6161 ft, install heavier rig to deepen to 9100 ft, td 7010 ft.

WEBSTER PARISH—Magnolia's Frank Sexton 1, c sw ne 32-23n-9w, elev 225 ft, 13⅜ in csg 838 ft, top first anhydrite stringer 4175 ft, top massive anhydrite 4348 ft, top Travis Peak 5701 ft, 7-in csg 6838 ft, dr 6850 ft. Lunsford & Ferguson's Turner 1, 20-20n-8w, sd 1820 ft.

WINN PARISH—G. W. Zeigen's La. Cent. Lbr. Co. 13, 4-13n-1e, woc surf csg.

MISSISSIPPI

CALHOUN COUNTY—S. and O. Properties, Inc.'s G. C. Cooner 1, nw se ne 12-24n-8e, dr 1680 ft (was carried Ed Spencer's J. C. Conner 1).

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, elev 199 ft, arr deepen, td 1455 ft.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, rur to deepen, td 50 ft..

HINDS COUNTY—Cleve Love et al's Montgomery 1, sw se se 28-6n-4w, lcn. S. F. Johnson 1, ne se 10-in csg 93 ft, cur titles. Black River Oil Co.'s Federal Land Bank 1, ne ne 11-15n-5e, elev 146 ft, dr 6655 ft basal Midway.

JONES COUNTY—Snow-Black Pet. Co.'s Cranford 1, s½ nw 29-7n-12w, sd 4280 ft.

LAMAR COUNTY — Southern Miss. Pet. Corp.'s Morris 1, nw se 4-2n-14w, arr deepen 50 ft. Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, elev 374 ft, dr 8446 ft, red beds, sand.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, elev 210 ft, dr 6665 ft sandy shale, strks lime.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, se sw 33-2n-4e, dr 1590 ft.

YALABOUSHA COUNTY—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25s-7e, elev 285 ft, dr 810 ft.

MICHIGAN

ALLEGAN COUNTY—Frank Vahue's Chadbourn 1, 28-2n-13w, sd 1810 ft. Eureka Dev. Co.'s Widenfeller 1, 29-4n-12w, dr 370 ft. Huges Heinig's Lundburg 1, 29-3n-14w, dr 1460 ft. A. Stellard's Schaffer 1, 29-3n-12w, dr 1110 ft. Fletcher Carcallen's Van Dam 1, 3-4n-14w, sd 1650 ft.

ARENAC COUNTY — Sterling Drlg. Co.'s Kline 1, 19-19n-4e, dr 2116 ft. D. F. Jone's Sibley 1, 33-20n-7e, sd 2400 ft.

BAY COUNTY—C. W. Teater's Goodman 1, 28-18n-3e, dr 1000 ft.

CALHOUN COUNTY — Mar Cal Dev.'s Woods 1, 13-2s-6w, rig. Verona Crude Oil Co.'s Fruin 1, 29-1s-7w, rig.

CLARE COUNTY—Gulf Ref. Co.'s Citizens Bank 1, 36-17n-4w, 8-in csg 950 ft. James McKay's Fee 12, 24-18n-5w, sd 1530 ft. Big Basin Oil Co.'s Murphey 1, 26-17n-3w, 10-in 570 ft.

GLADWIN COUNTY — Swanson Oil Co.'s Vantick 1, 30-17n-2e, Dundee 3462 ft, dr 3491 ft. W. E. Ross' Kinyon 1, 18-18n-2e, dr 2900 ft. Rex Oil Co.'s Auer 1, 22-18n-2e, dr 3200 ft. Sun Oil Co.'s Conrad 1, 12-19n-1e, dr 3100 ft. Franklin Pet. Co.'s State 1, 8-19n-2e, dr 265 ft.

ISABELLA COUNTY—J. V. Wicklund Development Co.'s Lawens 4, 24-15n-6w, dr 410 ft; Skarrit 3, 5-14n-6w, dr 2880 ft. J. G. Zabel's Kennedy 1, 25-14n-4w, dr 1800 ft.

KALAMAZOO COUNTY—Premier Oil Co.'s Bourner 1, 3-2s-12w, dr 69 ft; Stevens 1, 21-2s-12w, dr 110 ft.

LAKE COUNTY—Cherry Valley Oil Co.'s Rice 1, 25-18n-12w, sd 3100 ft.

MECOSTA COUNTY—Sun Oil Co.'s Robart 1, 29-16n-7w, dr 3400 ft. Jetter Drlg. Co.'s Deakins 1, 28-13n-7w, sd 200 ft. Frank Hebard's Weeks 1, 32-15n-7w, sd 1100 ft.

MIDLAND COUNTY—Sun Oil Co.'s State B-1, 5-16n-1w, testing 3903 ft; Consumers Power 1, 9-16n-1w, dr 1600 ft. Wicklund Dev. Co.'s Royalty Co. 3, 24-16n-2w, dr 450 ft.

MONTCALM COUNTY—Smith Pet. Co.'s Williams 1, 17-11n-7w, dr 600 ft. Socony Vacuum Oil Co.'s Hansen 1, 22-12n-6w, 5M gas Stray sand 1313-19 ft, 8-in csg 1319 ft, dr 1440 ft.

MUSKEGON COUNTY — W. Michigan's Herman 1, 35-10n-14w, dr 2260 ft.

NEWAYGO COUNTY — Midstates' Eichenberg 1, 7-16n-11w, dr 4355 ft.

OTSEGO COUNTY — Barton & Williams' Yuill 1, 9-32n-3w, dr 1200 ft.

SAGINAW COUNTY—Bridgeport Oil Co.'s Tobias 1, 35-11n-1e, 6-in csg 2655 ft, sd.

WEXFORD COUNTY—G. H. Schrack's Fee 1, 17-22n-9w, sd 3425 ft.

MONTANA

CARBON COUNTY—R. C. Tarrant's Heare 1, ne nw 14-6s-19e, Fox Dome, dr 1640 ft.

LEWIS AND CLARK COUNTY—Wm. Hanlon's Durnin 1, nw nw sw 11-18n-5w, dr 1190 ft.

YELLOWSTONE COUNTY—Broadview Oil Co.'s Halbritter 1, ne ne sw 18-2n-23e, dr 4173 ft. Madison lime.

NORTH DAKOTA—

WILLIAMS COUNTY—California Co.'s Kamp 1, cnw ne 3-154n-96w, Nesson anticline, cmtd 9⅝-in. csg on bottom at 6747 ft. and sd for winter.

OKLAHOMA

ADAIR COUNTY—Maddox's Penn Mutual Life Ins. Co. 1, cs½ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY—Sheldon & Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, dr 2398 ft. Stanolind & Amerada's Ridgway 1, nw ne ne 24-3s-9e, dr 1415 ft. Turner's Collins 1-A, sw ne ne 18-4s-10e, spd 85 ft.

BECKHAM COUNTY—Mid-American's Biscoe 1-A, sw sw sw 28-8n-22w, fsg 2631 ft.

BRYAN COUNTY—Southern's Henry 1, cnw ne 10-8s-7e, dr 2555 ft.

CADDO COUNTY—I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, td 6900 ft, sd.

CARTER COUNTY—Lloyd & Noble's Revelle 1, sw sw se 21-3s-2w, td 4028 ft, sd.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, pb & woc. Hollenback's Mantooth 1, nw nw nw 24-6n-1e, rig. Delaney's Bugher 1, se se sw 12-7n-2w, wo tools.

CHOCTAW COUNTY—Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, fsg tools at 340 ft. True's Boby 1, nw se nw nw 17-7s-19e, td 2044 ft, sdo.

COAL COUNTY—Carter et al's Claytor 1, cw½ ne sw 27-2n-9e, td 6248 ft, p. 163 bbls oil 24 hrs, comp.

COMMANCHE COUNTY—Wolf's Costinus 1, sw sw se 30-4n-11w, spd. Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft. Roach's Green 1-A, se se sw 2-1n-13w, dr 500 ft.

COTTON COUNTY—Bowers & Wise' Pendergraft 1, nw se sw 4-4s-12w, sd for rot tools.

CREEK COUNTY—Mosier's Holcomb 1, se sw ne 19-18n-8e, td 3018 ft, 2000 ft wih & sso, pop.

GARFIELD COUNTY—Hollenback's Clark 1, nw nw nw 34-21n-6w, td 7336 ft, woc.

GARVIN COUNTY—Edwards' Clark 1, ne ne ne 16-3n-3e, td 2676 ft, rust.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, dr 10,225 ft. Doyle's Huffine 1, nw nw se 30-5n-8w, der.

GRANT COUNTY—Magnolia's Reynolds 1, ne ne se 19-25n-5w, dr 6233 ft.

GREER COUNTY—Medlin's Broudie 1, nw nw nw 5-6n-20w, sd 90 ft. McDonald's Fite 1, se se nw 34-7n-21w, dr 886 ft. Gauntt & Baker's Parks 1, nw nw sw 29-7n-20w, dr 710 ft. Everitt's Graumann 1, ne nw nw 11-5n-21w, c & p.

HUGHES COUNTY—Phillips Pet.'s Becker 1, ne nw sw 8-5n-10e, dr 6193 ft. Doup's Bank 1, ne ne nw 7-7n-9e, dr 335 ft.

JEFFERSON COUNTY—Massad & Swainsberger's Barrett 1, ne se se 14-6s-6w, sd 1890 ft. Weir's Hayes 1, se se nw 23-7s-7w, der.

JOHNSTON COUNTY—Patton's McCrummens 1, sw sw ne 16-1s-6e, sd 1380 ft. Shelton's Chapman 1, cnw nw 26-4s-6e, dr 2925 ft.

KAY COUNTY—Shaffer's McKee 1, ne ne nw 20-28n-1w, sd 2500 ft. Shaffer's Rudolph 1, ne ne sw 27-29n-1w, cel. Nye's Willin 1, se se sw 24-27n-4e, c & p.

KIOWA COUNTY—Hughes & Reese's Fultz 1, se se se 10-6n-18w, td 1238 ft, ur 8¼ in csg to top of fish.

LOGAN COUNTY—The Texas Co.'s Roper

1, cw½ sw se 22-15n-1e, td 5542 ft, sdo. Arrow Drlg's Dobson 1, nw nw nw 23-17n-1w, dr 3065 ft.

LOVE COUNTY—Sinclair Prairie's Peabody Seating Co. 1, ne ne ne 35-6s-2w, bldg rig.

MAJOR COUNTY—Parsons' Patzkowsky 1, cnw¼ 10-20n-11w, rig abd.

MURRAY COUNTY—Owens' Gryer 1, ne se ne 34-1s-3e, dr 2685 ft.

MUSKOGEE COUNTY—Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

OKFUSKEE COUNTY—Mid-Continent's Irelan 1, sw ne sw 10-13n-10e, swb 125 bbls oil, 24 hrs, pop. Broswood Oil's Lehman 1, nw sw nw 21-13n-10e, dr 2435 ft.

OKLAHOMA COUNTY—Allen's Weaver 1, ce½ se nw 6-14n-3w, dr 5035 ft.

OKMULGEE COUNTY—Phillips' Woods 1, nw sw sw 31-11n-13e, td 3283 ft, ur. Detrick's McCann 1, nw se sw 33-14n-11e, dr 950 ft.

OSAGE COUNTY—Norbla-Carter's Mullendore Trust Co. 1, nw nw nw 3-24n-6e, spd.

PAYNE COUNTY—Sagamore's Moore 1, se sw nw 17-18n-1e, rig.

PONTOTOC COUNTY—Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, fsg 3320 ft. Lee's Weatherly 1, nw se nw 24-1n-7e, dr 200 ft. Riddle's Fee 1, nw sw se 11-3n-5e, dr 4220 ft.

ROGER MILLS COUNTY—Central Pet.'s Lambe 1, se se se 27-14n-21w, rig corners & sd.

SEMINOLE COUNTY—Woodson & Marydun Oil's Gilliland 1, se se sw 24-11n-7e, td 4287 ft, rust.

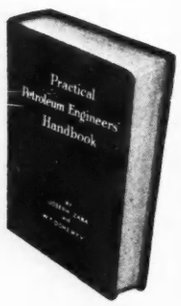
STEPHENS COUNTY—Coline's Johnson 1, sw se ne 1-2n-8w, woc 8987 ft. Helmerich & Payne's Pfile 1, sw sw sw 1-2s-7w, td 4246 ft, swbng. Parsons' Mouersberger 1, cs½ sw se 29-2n-8w, lcn.

TEXAS COUNTY—Hagey's Peck 1, cne¼ 6-1n-13ecm, td 2842 ft, dr plug.

TILLMAN COUNTY—Smith's Hammell 2, ne nw nw 6-5s-15w, sd 1581 ft. Cockburn's Nicholas 1, se se se 28-2s-19w, ru. Gibson-Jennings' Burleson 1, se se sw 35-2s-19w, lcn. Schoonover's Loftis 1, nw nw se 19-2s-18w, lcn. I.T.I.O. Co.'s Drumm 1, cn½ sw nw 32-2s-17w, sdo 3843 ft. Martin's Parris 1, nw nw sw 3-3s-19w, fsg 2135 ft. Grimes' Laney 1, nw nw nw 3-3s-18w, bldg rig.

WASHITA COUNTY—McWhirter's Fee 1, nw sw sw 34-8n-19w, td 2020 ft, ur 6 in csg.

PRACTICAL PETROLEUM ENGINEERS' HANDBOOK



By
JOSEPH ZABA, E. M. M. Sc.
Petroleum Engineer
Rio Bravo Oil Company
and
W. T. DOHERTY
Division Superintendent,
Humble Oil & Refining Company

For a number of years there has been a growing demand for a handbook containing formulae and other practical information for the benefit of the man working in the production and drilling branches of the oil industry. So great has been this need that many engineers have tried to accumulate their own handbooks by clipping tables, formulae and figures from scores of sources.

The co-authors of this volume discovered by coincidence that each had been for a period of several years accumulating practical data which through their collaboration appears in this book. Both of them are men who have not only received theoretical training but who have had many years of practical experience as engineers in dealing with every day oil field drilling and production problems.

As a result of this collaboration of effort the publishers of this volume feel that it is a most valuable contribution to oil trade literature.

Its purposes are distinctly practical. The tables, formulae, and figures shown are practical rather than theoretical in nature. It should save the time of many a busy operator, engineer, superintendent, and foreman.

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WEST TEXAS

(This report is confined to the north portion of the Permian basin).

ANDREWS COUNTY—Olney S. Black et al's O. B. Holt-Sun 1, c nw nw PSL sec D, blk 43, elev 3127 ft, top anhydrite 1795 ft, top Yates 2970 ft, top solid lime 4225 ft, tested fresh w at 4449-4515 ft, cored oil saturation 4515-38 ft, run cas to test. H. C. Wheeler and E. M. Wahlenmaier's F. E. Gardner 1, c sw sw PSL sec 15, blk A-35, elev 3177 ft, ur 925 ft. Seaboard Oil Corp. et al's Munger-Nix 1, c ne¼ PSL sec 1, blk A-41, elev 3250 ft, top anhydrite 1704 ft, bad hole, pb fr 1740 to 311 ft, redrilled, top Yates 2950 ft, dr 3270 ft.

BAILEY COUNTY—Geo. Etz et al's I. C. Enochs 1, c labor 66, league 182, Floyd C. S. L. sur, elev 3788 ft,top lime 3173 ft, fsh bailer in water zone 4139 ft.

COCHRAN COUNTY—Honolulu Oil Corp.-Cascade Pet. Co.-Devonian Oil Co.'s Duggan 2, sw¼ labor 13, league 55, Oldham C.S.L. sur, mim. Geo. P. Livermore et al (was J. R. Meeker et al's Mrs. D. Slaugter Wright 1, nwc sw¼ labor 26, league 96, Mills C.S.L. sur, elev 3774 ft, top anhydrite 2330 ft, top lime 4105 ft, first oil saturation 4865-87 ft, td 4997 ft, tested 1 bbl fluid per hr, 75 percent salt w, pb to 4987 ft, testing.

FLOYD COUNTY — Mills Bennett Prod. Co.'s Thos. Montgomery 1, nec F. J. Latham sur No. 2, A-520, elev 3129 ft, top lime 3255 ft, fsh 1700 ft drill pipe, td 5082 ft.

GAINES COUNTY—American Liberty Oil Co.'s (T. L. Wynee, Tr.) W. N. Willard 2, nwc of PSL sec 38, blk AX, dr 4620 ft. Amerada Pet. Corp.'s T. S. Riley 1, c se se of W. T. Ry. sec 229, blk G, elev 3333 ft, top anhydrite 1968 ft, pay 5014-47 ft, used 1000 gals acid, flowed 298 bbls initial 1-in choke; J. B. Robertson 1, c sw sw of W. T. Ry. sec 196, blk G, elev 3344 ft, top anhydrite 2113 ft, base salt 3092 ft, trace oil on dst at 5068-5112 ft, cem 5½-in csg 5000 ft, testing. Continental Oil Co.'s G. M. Langdon 1-43, nec w½ sec 43, blk AX, dr 4405 ft; W. M. Moore 1-45, nwc e½ PSL sec 45, blk AX, rur; A. L. Wasson 2-B, sec sec 53, blk AX, td 4971 ft, run tubing. Conoco-Amon G. Carter's A. L. Wasson 5, nwc sw¼ PSL sec 48, blk AX, td 4970 ft, testing; G. M. Langodn 2-44, swc se¼ sec 44, blk AX, td 4984 ft, testing. Ohio Oil Co.'s S. J. Averitt 2, c sw ne of W. T. Ry. sec 228, blk G, td 4767 ft, cem whipstock to drl by stem. Phillips Pet. Co.-I.T.I.O. Co.'s T. S. Riley 1, nwc sec 345, blk G, elev 3539 ft, used 5000 gals acid 4959 ft, tested sw, dry and abd. Plymouth Oil Co.-A. G. Carter and Conoco's H. Giesecke 1, nwc labor 1, league 296, Reagan C.S.L. sur, elev 3115 ft, top anhydrite 2270 ft, base salt 3150 ft, top brown lime 4540 ft, top solid lime 4930 ft, no shows, dr 5450 ft. Shell Pet. Corp.'s R. A. Cox 1, nec sec 380, blk G, CCSD&RGNG sur, elev 3537 ft, top anhydrite 2040 ft, pb fr hfw 4995 ft to 4950 ft, re-used 3000 gals acid, tested sul w dry abd; G. N. Robertson 1, nwc ne¼ sec 344, blk G, elev 3522 ft, top anhydrite 2210 ft, top brown lime between 4160 and 4180 ft, bad hole 4345 ft, pb and dr by at 4240 ft.

GARZA COUNTY—M. L. Richards et al's J. B. Slaugter 1, se se se of T. T. Ry. sec 5, blk 8, elev 2870 ft, top anhydrite 1293 ft, top salt 1355 ft, dry and abd in sul w 3502-21 ft. Gulf Oil Corp.'s Swenson 1, c nw H&GN Ry. sec 25, blk 2, Ordovician test, rur.

HOCKLEY COUNTY—Gulf Oil Corp.'s M. G. Gordon 1, nwc PSL sec 12, blk X, elev 3511 ft, dr 3040 ft; Mallett Land & Cattle Co. 1, nec PSL sec 6, blk X, elev 3552 ft, top anhydrite 2220 ft, dr 3837 ft. Honolulu Oil Corp.'s D. Slaughter 1-51, near swc labor 51, league 37, Zavala CSL sur, top anhydrite 2190 ft, top Yates 2800 ft, dr 3715 ft; D. Slaughter 1-77, labor 77, league 37, Zavalla CSL sur, lcn. Sid W. Richardson et al's Slaughter 1, swc labor 59, league 39, Maverick C.S.L. sur, elev 3547 ft, top anhydrite 2140 ft, top lime 4120 ft, dr 4750 ft.

KENT COUNTY—Thad A. Bryant, Jr. et al's Haggins 1, c nw ne H&GN sec 118, blk 1, 3 mi nw Girard, dk.

LAMB COUNTY — American Liberty Oil Co., T. L. Wynne, Tr.'s A. Neunschwander 1, 660 ft out of sec labor 1, league 660, State Capitol Lands, elev 3606 ft, top anhydrite 1712 ft, dr 4905 ft.

LYNN COUNTY—John L. Baldridge et al's Alamo Lumber Co. 1, ne sw sw sec 151, HE& WT Ry. sur, 6 mi w New Home, elev 3267 ft, dr 1720 ft. C. H. Hutto et al's Brownfield 1, near c of EL & Ry. Co. sec 6, blk A-1, sd 687 ft.

YOAKUM COUNTY—Bohago Oil Corp.-Bond Oil Corp.'s J. L. West 1, se se se sec 607, blk D, elev 3664 ft, top anhydrite 2275 ft, dr 5216 ft. J. L. Crump-Black Bros.' Bennett 1, swc e½ sw¼ sec 631, blk D, lcn. Denver Producing & Ref. Co.'s J. A. Whittenburg Est. 3, c ne se sec 863, blk D, used 7000 gals acid at 5028 ft, flowed 456 bbls initial; Whittenburg 4, c nw ne sec 831, top anhydrite 2182 ft, dr 4200 ft; Whittenburg Est. 2-A, c ne nw sec 830, blk D, elev 3608 ft, top anhydrite 2220 ft, used 7500 gals acid 4896-5070 ft, flowed 461 bbls 34 deg. oil initial. Gulf Oil Corp.'s S. J. Dixon 1, sw se se sec 609, blk D, elev 3638 ft, top anhydrite 2370 ft, trace gas 4885-4900 ft, dr 5005 ft; J. C. Futch 1, nw se se sec 796, blk D, dr 1580 ft. Honolulu Oil Corp.'s R. E. Bennett 3, near c e½ se¼ sec 677, blk D, top anhydrite 2360 ft, top Yates 3090 ft, pay 5116-5249 ft, shot 575 qts 5100-5241 ft, flowed 826 bbls potential. Honolulu & Cascade Pet. Co.'s Bennett 2, nwc ne¼ sec 678, blk D, top anhydrite 2410 ft, top Yates 3203 ft, dr 4940 ft. Humble's Abilene State Bank 1, sec PSL sec 37, blk AX, rur; J. H. Lynn 1, c se se sec 798, blk D. Mid-Continent Pet. Corp.'s Bennett 1, nwc sw¼ sec 678, blk D, top anhydrite 2370 ft, dr 4650 ft; Bennett 2, sw sec 678, rur. Ohio Oil Co.'s L. N. Clawater 1, c nw nw sec 638, blk D, elev 3659 ft, top anhydrite 2160 ft, top Yates 2900 ft, cored oil stain 5105-20 ft, dr 5175 ft; Fairman 1, c se se sec 797, blk D, cem 5½-in cas 4600 ft, td 4650 ft. Phillips Drl. Co. et al's W. A. O'Brien 1, nec sec 441, blk D, lcn. J. W. Murchison & L. Fikes' C. A. Elliott 2, c se ne sec 832, blk D, sp. Magnolia's J. D. Webb 1, swc ne sec 477, blk D, J. H. Gibson sur, rur. E. H. Pitkin & Lou Stogner's J. A. Blades 1, c ne ne sec 103, blk D, elev 3851 ft, top anhydrite 2393 ft, top Yates 3230 ft, top solid lime 4460 ft, first saturation 5198 ft, td 5266 ft, pb to 5245 ft, used 1000 gals acid, dd to 5307 ft, tested water, dry and abl. Shell's Geo. Baumgart 1-B, se¼ sec 829, blk D, used 5000 gals acid in lime 4850-5010 ft, flowed 30 bbls oil per hr; Baumgart 1-C, ne¼ sec 866, elev 3580 ft, top anhydrite 2238 ft, top Yates 3030 ft, top brown lime 4000 ft, top solid lime 4470 ft, coring 4790 ft; Baumgart 1-D, swc sec 826, blk D, mim; Ruth Bennett 2, sw se ne sec 677, blk D, mim. Sun Oil Co.'s J. H. Lynn 1, c ne ne sec 798, blk D, elev 3609 ft, top Yates 2950 ft, used 6000 gals acid 5065 ft, flowed 52 bbls oil first hr, testing. T. P. Coal & Oil Co.'s Ruth Bennett 4, near c w½ nw¼ sec 678, blk D, dr 4480 ft; Bennett 5, sec nw¼ sec 678, dr 600 ft. The Texas Co.'s N. W. Willard 1, c sw sw sec 799, blk D, elev 3614 ft, used 2000 gals acid 5085 ft, flowed 291 bbls oil 24 hrs, re-acidized 5000 gals, testing; Willard 2, c nw nw sec 799, elev 3613 ft, top lime 4460 ft, oil pay 5026-35 ft, dr 5045 ft; Willard 3, c se sw sec 799, lcn; Ruth Bennett 1, swc se sec 631, blk D, lcn. Toddie L. Wynne, Tr.'s Fairman 1, c se ne sec 797, blk D, elev 3627 ft, top anhydrite 2160 ft, dr 4680 ft; N. W. Willard 2, nwc PSL sec 38, blk AX, top anhydrite 2085 ft, dr 4620 ft.

EAST TEXAS

BOWIE COUNTY—King Oil Corp.'s W. W. Ames 1, J. A. Talbott sur, 4½ mi nw Texarkana, elev 362 ft, base anhydrite 3990 ft, dr 4200 ft; Nanny Watts 1 (12-ac), G. Brinbee sur, 4 mi w Texarkana, cem sur pipe.

CHEROKEE COUNTY—Merica Oil Co.-W. L. Stone's Cherokee Dev. Co. 1, A. J. Acker sur, 2 mi e Maydelle, dr 3175 ft. Gray & Wolfe's M. Dupree-Shell 1 (131-ac), Levi Jordan sur, top Pecan chalk 3940 ft, base Austin chalk 5070 ft, coring Woodbine, salty taste, 5130 ft. John G. Mayo et al's J. H. Bowling 1, W. H. Walters sur, 2 mi se Lone Star, dr 1250 ft.

DALLAS COUNTY—Mauldin Oil Co.'s W. E. Howell 1 (107-ac), S. Layton sur, 8 mi e Grapevine, sd 807 ft. Plaza Oil Co.-W. A. Brooks Jr.'s B. J. Davidson 1 (75-ac), John D. Merchant sur, cem sur pipe.

DELTA COUNTY—O. W. Killam et al's Delta Farming Assn. 1, J. Dollahite sur, 4 mi ne Sulphur Bluff, elev 348 ft, top Woodbine 2712 ft, sd 2881 ft.

FRANKLIN COUNTY—Ajo Oil Corp. (was Chenault et al's) T. J. Sanders 1 (2-ac), C. Payne sur, Talco lower Trinity test, elev 365 ft, Pecan chalk 1602-1920 ft, top Red Beds 3635 ft, top Georgetown 4012 ft, to dd fr 4374 ft.

GREGG COUNTY—Humble & Gulf's E. D. Robertson 1 (11.4-ac), M. Mann sur, 2½ mi w by s of Longview, 4 mi e production, elev 272 ft, Austin chalk 3202-3341 ft, top Georgetown 3341 ft, top Paluxy 4541 ft, top first Glen Rose 4876 ft, top anhydrite stringer 5617 ft, massive anhydrite 6214-6532 ft, top Travis Peak 7325 ft, dr hard sand 8385 ft.

HENDERSON COUNTY—E. B. LaRue et al's Breedlove-Mills 1 (232½-ac), J. Dunn sur, 5 mi nw LaRue, elev 485 ft, Pecan chalk 1906-1970 ft, Austin chalk 2635-2960 ft, top Woodbine 3004 ft, coring 3045 ft.

HOUSTON COUNTY—Peyton Bros. et al's J. P. Daniels 1 (100-ac), Juan M. Procella sur No. 70, ½ mi n Percilla, sp. Humble's C. B. Dailey 1, J. de la Reviere sur, mim.

LEON COUNTY—Lone Star Gas Co.'s Sara Melasky 1 (81.98-ac), M. C. Lee sur No. 500, Buffalo area, dr 2500 ft.

LIMESTONE COUNTY—J. S. Cosden Jr. et al's J. J. Bower 1 (15-ac), J. Breeding sur,

near Prairie Hill, lcn. Stanolind & Ramsey Pet. Corp.'s T. Norris 1 (40-ac), K. Thrasher sur, 5 mi n Kosse and on Thornton fault, elev 528 ft, Austin chalk 2791-2890 ft, top Woodbine 2980 ft, top Georgetown 3255 ft, top first Glen Rose 4026 ft, top first anhydrite 4886 ft, top Pettit 5375 ft, top Travis Peak 5528 ft, top lower Marine 7595 ft, top white lime (Snow Hill), 8525 ft, run protection string 7-in at 8727 ft.

NAVARRO COUNTY—Mrs. Jane Robinson et al's Fortson Bros. 1, Eli Smith sur, 5 mi ne Corsicana, elev 345 ft, Austin chalk 1346-1585 ft, top Woodbine 2185 ft, sd 2215 ft. Natural Pet. Co.'s Karen Brown 1 (309-ac), W. T. Turner sur, 2 mi e Roane, elev 433 ft, mim. L. B. Orchard & A. G. W. Biddle's G. M. Gibson 1, Isaac Bird sur, 6 mi s Rural Shade, lcn.

SMITH COUNTY—John G. Mayo, Housh & Thompson, Inc.'s J. B. Mayfield 1 (130-ac), Wm. Keys sur, 4 mi se Tyler, mim.

UPSHUR COUNTY — Tom Hunter and American Liberty Oil Co.'s Dr. Chas. Carter 1 (80-ac), J. H. Fields sur, 1¼ mi n Kelsey, Trinity test, elev 428 ft, Pecan chalk 2250-2690 ft, Austin chalk 3295-3332 ft, top Red Beds 5085 ft, top Paluxy 5590 ft, top anhydrite stringer 5978 ft, massive anhydrite 6520-6756 ft, basal anhydrite stringer 6786-6807 ft, dst in 2nd Glen Rose at 6991-7111 ft, showed 1000 ft salt water 16 minutes, to deepen.

EAST TEXAS BORDER COUNTIES

CASS COUNTY — V. A. Hughes & Co.'s Lyster 1, Wm. Bateman sur, top Georgetown lime 4215 ft, dr 4670 ft. G. H. Vaughn's Ryley 1, Taylor sur, dr 2925 ft.

HARRISON COUNTY—Ark. Fuel Oil Co.'s C. M. Abney 1, Eason Little sur, drilling out bridges, after killing well, arr deepen, td 4820 ft.

PANOLA COUNTY—Preston et al's Rusing 1, Mannan Smith sur, owdd, td 2950 ft. Texas Co.'s Claude Adams 1, Thos. Cox sur, 13⅜ in csg 579 ft, dr 1700 ft.

SHELBY COUNTY—Joe Burnham et al's George 1, C. C. Tutt sur, owdd, td 2950 ft.

SOUTH TEXAS

LAREDO DISTRICT

DUVAL COUNTY—Argo's Bolte 1, sec 18, lcn. Carter-Rubsamen's Peters 1, sur 66, dr 2365 ft. Cowan & Sorey's Taylor 1, sec 214, dr 845 ft. Culton's Sutherland 1, sec 188, ru. Dovre's Hagist 1, sec 265, fsg, drk pulled in, TD 1780 ft. Gillespie's Hamilton 1, sur 85, coring 3089 ft. Frank Gravis' Megerle 1, sur 245, prep to sp, wtr well comp. Magnolia's DCRC 1, sur 196, ru. Lopez 1, sur 82, sd for repairs 6832 ft. Southwood's Nolen 1, sur 104, dr 4135 ft.

JIM HOGG COUNTY—Smith & Hamill's Saunders, sec 9, abd 3085 ft. Stephen's Gruy 1, Kohler subd, coring 2825 ft.

McMULLEN COUNTY—Day's Wolff est 1, sec 77, prep mim. Howell and Richardson's Martin 2, sec 7, sd 580 ft. Magnolia's Edrington 1, sur 85, dr 1045 ft. Reynold's Shiner Ranch 1, sec 82, coring 2065 ft. Richardson & McCarty's Martin 1, sur 6, sd 710 ft. Rowan & Nichols' Rhode 2, sur 21, dr 1480 ft. Schimmel's Hagist 5, sec 33, mim.

STARR COUNTY—Collins' Guerra 1, sh 20, coring 4775 ft. Transwestern's Slick 1, sur 266, pressure equalized at 1700 lbs., while flowing through 7/64 in., shut in.

WEBB COUNTY—Boysen & Jones' Watkins 1, sec 20, dr 3115 ft. Clopton's Bruni 1, sec 9, dr 2565 ft. Colton-Lester-Mitchell, Inc's Lopez 1, sur 55, set csg, td 2680 ft. Davidson's Killam-Schott 1, sur 471, lcn. Gilcrease's Trafton 1, sur 282, dr 1125 ft. Moore and Meaders' Garcia & Villareal 1, sur 786, ru.

ZAPATA COUNTY—Brown's Guetierrez 1, blck 12, recem., woc, 2362 ft. Edwards' Garza 1, blk 96, dr 1610 ft. Tomkins' Gutierrez 1, Charco de la India gr, sp and set sur csg.

SAN ANTONIO DISTRICT

BEXAR COUNTY—Ball & DuBose's Miller 1, sur 55, prep to res. dr. 740 ft. Fair's Hatch 1, Pickens sur, dr 515 ft. Hamill & Hamill's Brietzke 1 Rodriguez sur, drk. Hicock & Reynolds' Ewert 1, sur 201½, underreaming to lower 10 in., td 1374 ft. Parsynsen's Fee 1, Lindsay sur, dr 1180 ft.

BURLESON COUNTY—Red Bank Oil Co.'s Coffield 1, Santef sur, lcn.

CALDWELL COUNTY—Brady & Pummel's Jackson 1, Morris sur, sd 2680 ft. Byrd's Parr 1, Hinds sur, sd 1005 ft. Mac-Wag-Tree's Roberts 1, House sur, swabbing 2633 ft. Owens & Van Wagnen's Smith 1, Roe sur, dr 1875 ft.

DIMMITT COUNTY—Teas and Maryland's McKnight 1, sec 23, dr 6900 ft.

EDWARDS COUNTY — Evans & Love's Brown 1, G W T & P sur, sd 5753 ft. Mitchell's Turney 1, sec 164, lcn.

GUADALUPE COUNTY—Kallison's Burris 1 coring 3370 ft. Spiller's Wright 1, Cottle sur, sd 40 ft.

KERR COUNTY—Edmiston's Saul 1, sur 47, sd.

MAVERICK COUNTY—Wellington's Chittim 1, dr 3322 ft.; Chittim A-1 2150 ft.

MEDINA COUNTY—Trentman & Merritt's Carle 1, sur 72½, dr 500 ft.

MILAM COUNTY—Tuxedo's Graves 1, Robertson sur, dr 893 ft.

TRAVIS COUNTY—Smith's Morell 1, Winburn sur, dr 175 ft.

UVALDE COUNTY—Wilcox's Morris 1, sur 380, dr 152 ft.

CORPUS CHRISTI DISTRICT

BEE COUNTY—Dirks' Beck 1, sec 17, perf in snd 4221-26, large gasser, spraying abt 25 bpd oil, broke in, recementing.

COLORADO COUNTY—Coyle-Concord's Broussard 2, Hill-Dufner sur, coring 6010 ft.

DEWITT COUNTY—Davis' Afflerbach 2, sur 44, sd at 4485 ft. Hines' Boothe 1, Swindle sur, sd for repairs 1360 ft.

HIDALGO COUNTY—Johnson's Daskam 1, por 45, mim.

JACKSON COUNTY—Magnolia's West Ranch 1, Musquiz sur, sd 5896 ft in water sand, repairing boiler.

JIM WELLS COUNTY—Howell's Goldapp 1, La Vaca gr, coring 1758 ft. Magnolia's Seeligson 8, Los Jaboncillos gr, dr 4210 ft. Rowan & Hope's Adams 1, sur 19, sd 3500 ft, repairs.

KARNES COUNTY—Randon's Radford 1, Martinez sur, prep to dr ahead 150 ft.

KENEDY COUNTY—Sal Vieja's Garcia 2, sh 59, sp.

KLEBERG COUNTY — Magnolia's Dietz 1, sec 7, reaming 7165 ft.

LIVE OAK COUNTY—Chew & Hantho-Nelson's Bell 1, Parks sur, 5¼ in. at 5058 ft, will dr plugs 2-9-38, run screen and test 2-10. Franklin's Russell 1 Hefferman sur, Mim. Hagan-Stewart & Loma's Regan 1, Hely gr, dr 1013 ft. Hannah's Wedding 1, Haughy's sur, dr 2398 ft. Hantho-Nelson's West 1 sur 59, woc, set surface 256 ft. Holland's Alamo 1, blk 15, prep to dr below surface. Newton's West 1, Pieratt sur 129, mim. Parr's Brannon 1, sur 45, ru.

NUECES COUNTY—Andrade's Dunn 1, Martinez sur, ru. Camp's Wardner 4 dr 4875 ft. Grant's McKinzie 1, sur 422, lcn. Renwar's McKinzie 1, sec 419, perforating csg, td 5872 ft.; Morgan 1, sur 413, fsg, 5476 ft. Richardson's Cowles 1, sec 43, dr 4178 ft. Rutherford's Stewart 1, sur 418, now reaming 5950 ft, will abd at 6000 ft. Southern Minerals' King 5, blk 6, coring 3990 ft. Temple's Singer 1, sur 421, dr 5205 ft. Texon's Horne 1, Pala Alto gr, dr 2500 ft. Union's Brown 1, Fuentes sur, woc, 21½ in. sur at 399 ft.; Galladay 1, Garcia gr, coring 7500 ft.; Rivers 4-A, Garcia gr, dr 5625 ft.; Simmonds 1, Agua Dulce gr, si for storage 8706 ft.

REFUGIO COUNTY—Continetal's Scott 1, Reojas sur, coring 3482 ft. Hogan's Kelly 2, Power sur, dr 3518 ft. T-N Dev.'s Lambert 1, Refugio Town tr, dr 4453 ft.

SAN PATRICIO COUNTY—Bob's Green 2, Williamson sur, wshg to btm, 6533 ft. Cain's Guy 1, sec 70, dr below sur 1500 ft. Conroe's Dougherty 1, McGloin sur, coring 6195 ft. Moore's Kelly 1, lot 24, dr 1500 ft. Plymouth's Brigham 1, sec 62, dr 5070 ft.

VICTORIA COUNTY—Edward's Robertson 1, Burnham sur, dr 1250 ft. Stanolind's Vandenberge 1, Benavides sur, ru. Superior and Gillespie's Mahon & Buehler, S. A. Valley Ditch Co. sur, ru.

WILLACY COUNTY — Magnolia's Armendiaz 1, sh 4, dr 8620 ft.

TEXAS GULF COAST

BRAZORIA COUNTY — Pure's Smith 1, Peach Point, S. F. Austin sur, dr shale 9354 ft.

CHAMBERS COUNTY—A. A. Cameron's White 1, Canada Ranch, S. Brill sur, dk. Laverne Decker's Broussard Trust 1, Double Gum Bayou area, H & T C 30, lcn. Salt Dome & Standard of Texas' State 1, in Galveston Bay, testing 6030 ft.

GALVESTON COUNTY—Sun's Cade & Co. 1, Bolivar prospect, A. Dickson sur, canal.

GRIMES COUNTY—Hubert Holt et al's Greer 1, Carlos area, P. B. O'Conner sur, sd 1806 ft.

HARRIS COUNTY—W. S. Howell's Root 1, Battleground area, A. McCormick sur, dr shale 2578 ft. Humble's Rohlf 1, n of Crosby, J. Sellers sur, dr shale 6628 ft.

JEFFERSON COUNTY—J. E. Harwell's State 1, in Gulf of Mexico, sd 3700 ft. Humble's McFaddin-State 1, in Gulf of Mexico, driving piling. Glenn H. McCarthy's Broussard Trust 1, Cheek area, C. Hillbrandt sur, testing 7725 ft.

MATAGORDA COUNTY — Pierce Estate's Fee 1, n of Van Vleck, I. & G. N. sur, running 7 in casing at 6624 ft. Sun's Robbins 1, n of Citrus Grove, C. H. Vandeveer sur, running an electrical logging device at 9497 ft.

WHARTON COUNTY—Strake's Strunk 1, Lissie area, L. P. Jennings sur, coring sand and shale 9443 ft.

UTAH

GRAND COUNTY—Crane Creek Oil Co.'s Government 1, nw sw 31-26s-21e, pulling 12½-in. csg from 245 ft. to ream ahead 20 ft. and recement. Td 867 ft. Columbia Crude Corp.'s Rath-Government 1, ne sw 12-25s-20e, dr 2620 ft.

WYOMING

ALBANY COUNTY—Wyco Oil Co.'s Chappell 3, ne ne nw 33-21n-76w, fsg 2546 ft.

CARBON COUNTY—Italo Petroleum Corp.'s Tunney-Bragg 1, cne se nw 11-26n-81w, pb to 770 ft. from 820 ft. to straighten hole.

NATRONA COUNTY—General Petroleum Corp.'s Government 1, nw nw se 21-35n-77w, dr 6048 ft.

WESTON COUNTY—John Brorby's George 1, sw se nw 12-47n-64w, dr 1950 ft.

Valves and Gauges

The J. E. Lonergan Company, 211-217 Race Street, Philadelphia, recently issued catalog No. 500, which contains the latest approved line of specialties for steam, hydraulic, air, oil and ammonia services.

Rubber Goods

The Cincinnati Rubber Manufacturing Company, Cincinnati, Ohio, announces the publication of a new catalog, which contains complete descriptions of transmission belting, conveyor belting, various types of rubber hose, and numerous other small items.

William M. Barret, Inc.
Consulting Geophysicists
Specializing in Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.
GIDDENS-LANE BUILDING
SHREVEPORT, LOUISIANA

Fifteen Years Practical Experience
REPRESSURING
JO H. CABLE
PETROLEUM ENGINEER
Wichita Falls, Texas

THE FORT WORTH LABORATORIES
Analyses of oil field brines, cores, gas, oil, and minerals. Field gas testing. R. H. Fash, Vice-President; Long distance 138. 328½ Monroe Street, Fort Worth, Texas.

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HARDWAY & CATHEY
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Phone Capitol 9756 Houston, Texas

JACK A. SCHLEY
Patent Attorney
(Established 1902)
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County Ownership & Oilfield Maps
ZINGERY FORT WORTH ZINGERT
OIL MAP COMPANY

NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Equipment

CIRCUIT BREAKER MECHANISM
General Electric Company

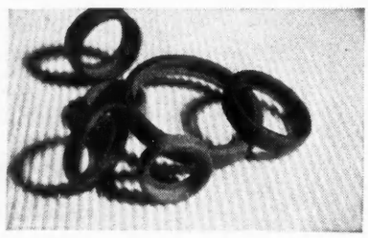
General Electric Company, Schenectady, New York, has announced the development of a new circuit breaker mechanism to supersede the centrifugal motor mechanism formerly used to operate type FH oil-blast circuit breakers. Supplied for d-c operation, the new type ME-10 mechanism is a positive, high-speed, motor-driven cam device which operates smoothly, requires no close adjustments, and takes four inches less headroom than the old type.

The cam acts against a roller connected to a standard trip-free linkage. At the end of the closing stroke, the motor is electrically disconnected, the excess energy of the cam is absorbed by a dashpot, and the cam is returned to starting position by a spring. Definite proportioning of closing force to closing requirements of the breaker provides high-speed closing without undue shock or over-travel at the end of the stroke. The high power supplies the force for compressing the springs required for high-speed opening.

PIPE ENDS
Continental Diamond Fibre Company

Continental Diamond Fibre Company, Newark, Delaware, recently introduced to the market a new line of its products, known as Dilecto pipe ends.

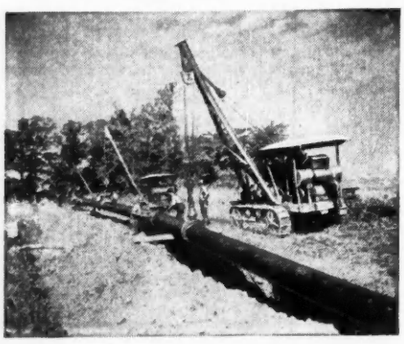
These pipe ends are a molded laminated plastic product. They have high electrical insulating properties, good mechanical strength and are unaffected by water, steam, chemicals, or chemical fumes, or by high or low temperatures, as well as rapid changing temperatures. They are designed to prevent dangerous grounds and are made in two styles, either threaded to fit standard pipe and conduit thread, or plain with three set screws for fastening. Both types are made in standard sizes from ½ to 4 inches.



Continental "Dilecto" Pipe Ends.

CRAWLER HOIST
The Harnischfeger Corporation

The Harnischfeger Corporation, Milwaukee, Wisconsin, announces the P&H multi-service crawler hoist. Provided with three hoisting drums, the hoist combines in one machine unusually high lifting capacity with the drawbar pull and mobility of a tractor from which it is possible to work off either side or over the front end. With three forward travel speeds ranging from 1.3 miles per hour in low gear to 5.2 miles per hour in high, this machine gives tractor mobility to meet all ground conditions whether the job calls for climbing steep hills or traveling through soft, swampy areas. It has a ground pressure of only 7.6 pounds per square inch. Its live boom is quickly adjusted up and down, enabling the hoist to adapt itself to a wide variety of work—handle it easily, maneuver smoothly and perform many tasks that might otherwise require a number of machines.



Harnischfeger P&H Multi-Service Crawler Hoist.

Some of the jobs which the P&H Multi-Service Crawler Hoist can handle easily are: lifting as a crawler crane or clamshell, pipe handling, back filling trenches and general utility lifting and moving work in theoil fields, earth boring through a boring head that will dig holes at any angle up to 45 degrees in any direction.

The P&H Multi-Service Crawler Hoist travels and works fast—lifts up to 35,000 pounds with stiff leg. It loads itself on its own automotive type trailer for long distance travel.

NEW EDITION, ARC WELDING HANDBOOK, ANNOUNCED BY LINCOLN ELECTRIC

"Procedure Handbook of Arc Welding Design and Practice," fifth edition just announced by The Lincoln Electric Company, Cleveland, Ohio, contains 1012 pages and a total of 1243 illustrations including photographs and drawings. The Handbook is reissued each year to include all new data essential for most efficient use of arc welding in all its varied applications.

Encyclopedic in scope, concisely written and profusely illustrated, the Handbook is the complete arc welding reference guide. Written especially for use of designers, engineers, architects, production managers, welding supervisors and operators, the Handbook contains a wealth of data of interest to draftsmen, steel fabricators and erectors, foremen, cost estimators, maintenance managers, shipbuilders, piping and pipe line contractors and students of welding.

The Procedure Handbook is 5¾ x 9 inches, an ideal size for desk or shop use. The binding is brown semi-flexible simulated leather, gold embossed. Copies will be mailed, post paid, to any address in the United States for $1.50 per copy; foreign $2.00 per copy.

AUTOMATIC LOWERING JACK
The Buda Company

The Buda Company, Harvey, Illinois, recently announced the first model of a new and improved line of heavy-duty

Buda Jack

READY for LIFE

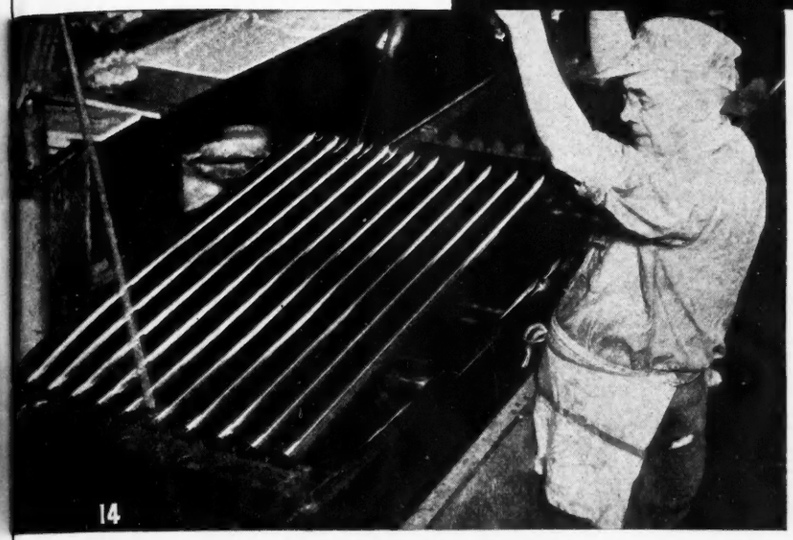
in steady pumping

THE BIRTH OF PLUNGERS AS SEEN BY AXELSON'S CANDID CAMERA . . .

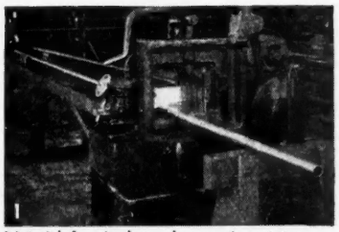
Countless thousands of strokes — plunger against liner, metal to metal, week after week, for months. That's the kind of treatment to which Axelson plungers are subjected and for which they are fitted.

Manufactured from the finest materials under the guidance of one of the ablest engineering staffs in modern industry, Axelson plungers meet any pumping condition.

Axelson plungers are working longer in the bottom of more wells than any other plungers made.

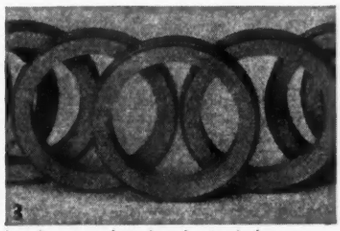


After a thorough cleansing in vapor de-greasing machines, Axelson plungers are completely protected by the application of a rust-preventive solution.



Material for Axelson plungers is cut to proper lengths by power hack saws. These lengths are then ready for preliminary heat treatment.

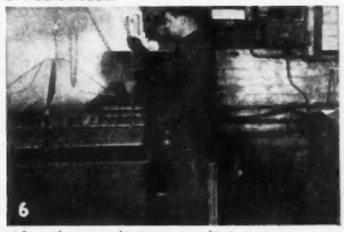
Next, plunger blanks are packed in special containers with carburizing material and then sealed. This operation impregnates surface of plunger blanks with carbon.



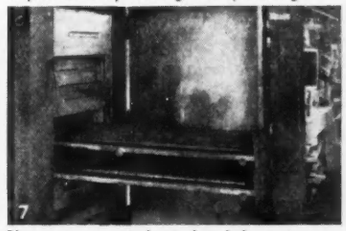
Random samples of carburized plunger stock are checked for case depth to predetermined Axelson specifications. This is but one of a series of tests.

First machining operation in the manufacture of Axelson Super-Service Hardened Steel Plungers is the cutting of the grooves. Grooves are checked for depth.

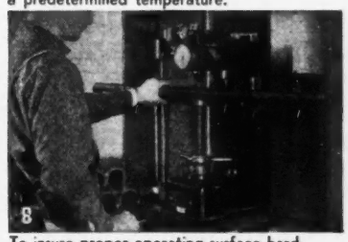
Carburized surface in ends of plungers is removed by boring. This is done to prevent hardening of the subsequently machined threads.



After these preliminary machining operations, plungers are returned to heat-treating department where hardened surface is produced by heating and quenching.



Plungers are again heated and drawn to relieve internal strains. The drawing operation consists of reheating and cooling at a predetermined temperature.

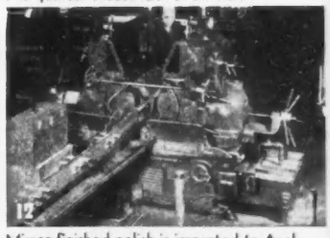


To insure proper operating surface hardness, each Axelson plunger is carefully checked in a Rockwell hardness testing machine.

Plungers are then returned to machining department where both ends are finish-reamed and threaded to receive plunger fittings.

In order to insure proper adherence to A.P.I. specifications, plunger threads are checked with Go and No-Go thread gauges.

Surfaces of Axelson plungers are accurately finished to correct diameter by grinding. Tolerances are held to within one-quarter thousandth of an inch.



Mirror-finished polish is imparted to Axelson plungers by specially designed machines. This high polish permits smooth action and provides long life.

In the final inspection, Axelson plungers are rigidly checked for surface finish, straightness, concentricity and conformity to size and A.P.I. tolerances.

To avoid the possibility of corrosion induced by handling and exposure, Axelson plungers are immediately packaged in waxed, weather-proof containers.

Complete stocks of Axelson plungers insure rapid service to the industry. Extreme care is exercised in the storage of Axelson plungers.

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

AXELSON

DEEP WELL PLUNGER PUMPS

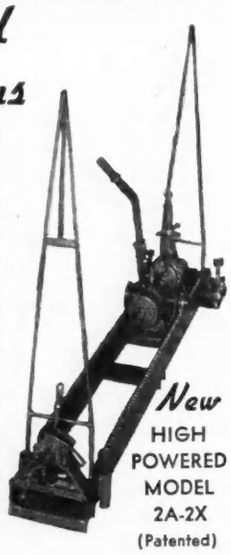
SUCKER RODS

Axelson Manufacturing Company, P. O. Box 98, Vernon Station, Los Angeles • St. Louis • 50 Church Street, New York • Tulsa

Mid-Continent and Eastern Distributor: Frick-Reid Supply Corporation • *Rocky Mountain Distributor:* Great Northern Tool & Supply Company.

Eliminates Expensive
DITCHING AND TUNNELING
for Underground
Pipe Installations

The Hydrauger method of underground pipe installation reduces costs to but 1/10th that of cutting pavement, trenching, backfilling and repairing. It saves time and reduces costs on even the simplest jobs. It offers a low cost solution for many otherwise prohibitively expensive service extensions. Hydrauger's wide range of bore sizes (2½" to 14½") is sufficient to cover trunk and main oil, water, sewage, gas pipeline needs as well as the small service connections for gas or water. Hydrauger is fast—it has bored 38 feet of 4½" hole in 38 minutes. It bores through solid rock or any other formation encountered underground.



New
HIGH POWERED MODEL 2A-2X
(Patented)

HYDRAUGER CORP., Ltd.
116 New Montgomery Street
SAN FRANCISCO
Distributors in Principal Cities

Write for Bulletin No. 5

HYDRAUGER
"The Mechanical Gopher"

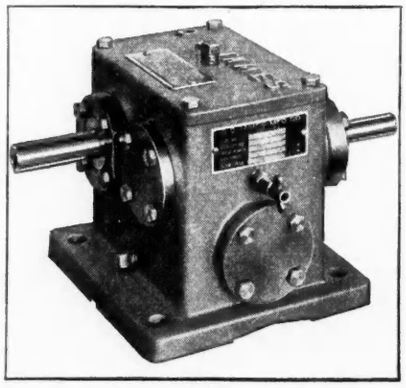
automatic lowering jacks, especially designed for oil field service.

The Buda emergency jack No. 2215-H is the first model of the new line available for oil field service. It is a hinged type jack which permits operation at various angles. The 2215-H weighs only 64 pounds, has a 15-ton capacity, is 22 inches high, and the rise of 13¾ inches gives it more rise per height than is available in most other jacks of the same type and capacity.

One of the many features of No. 2215-H is that the load may be raised or lowered on three sides of the jack without interference. Another feature is that the automatic lowering device, which is an improved, simplified, adjustable, one-piece unit, is located in full vision of the operator. This removes the posibility of accidents during raising and lowering operations. The jack is easily handled by a handle conveniently located at the top of the jack, so that it does not interfere with operation.

GEAR REDUCERS

D. O. James Manufacturing Company



D. O. James Double Worm Gear Reducer.

D. O. James Manufacturing Company, 1114 West Monroe Street, Chicago, announces a new double-worm gear reducer with range of speed ratios from 30 to 3600 to 1, having torque capacities at slow speed shaft from 40-inch pounds to 400-inch pounds.

This type reducer consists of two bronze worm gears and steel worms mounted on Timken tapered roller bearings within a small space, giving a light drive with high ratios.

POWER UNIT

Bardco Corporation of America

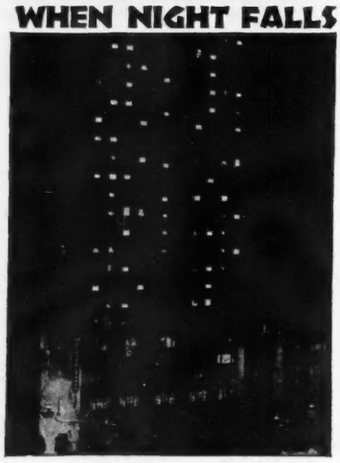
Bardco Corporation of America, Los Angeles, introduces a new power unit for operators of compressors, pump hoists, welders pump-jacks and other oil field and refinery equipment. According to the manufacturer, power produced by this new unit is as low as 1/3 of a cent per housepower hour.

The unit is designed with unusual compactness for either stationary or portable service. Choice may be had of Ford V-8 engine or Diesel engines, and of fuel, natural or artificial gas, gasoline, distillate, butane, or Diesel fuel.

New Bardco Power Unit.

Special features include the oversize oil re-refining unit which saves oil drains, excess dilution and acid, and the completely automatic safety controls which protect the equipment from low oil and water supply. In case of danger, the engine is stopped by the safety controls and they can be set to give a warning signal at any predetermined point.

WHEN NIGHT FALLS



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THE
WARMTH AND CHEER
ABOUT THE
PITTSBURGHER
Steel City's Newest Hotel

All rooms have radio at no extra cost, outside view & bath.

MUST BE A GOOD HOTEL TO BE SO POPULAR

RATES: Single Occupancy . . . . $3.00 to $4.00
Double Occupancy . . . . $4.50 to $6.00
Only Hotel in Pittsburgh with Radio in Every Room

THE HOTEL PITTSBURGHER

A KNOTT HOTEL ★ JOSEPH F. DUDDY, *Manager*

This Week with the Industry's EQUIPMENT SUPPLIERS

The Continental Supply Company Makes Stanbery Sub-Surface Head

In keeping with a program calling for the expansion of the parts and service facilities for pumping equipment in 55 branch stores of The Continental Supply Company, the appointment of R. B. (Bob) Stanbery as manager of the sub-surface equipment division was announced last week.

R. B. STANBERRY
Manager of subsurface equipment division, The Continental Supply Co.

Long identified with the oil industry, Stanbery has been a special representative for The Continental Supply Company since 1935. Previously, he was associated with the D & B Pump and Supply Company, Los Angeles, manufacturers of pumping equipment for The Continental Supply Company. In this capacity, Stanbery was instrumental in the development of equipment to pump from present deep horizons. His early experience was with Frick-Reid Supply Corporation in Ohio and Superior Oil Corporation in California.

Goodyear Tire Creates New Cleveland Sales District

Goodyear Tire & Rubber Company, mechanical goods division, Akron, Ohio, recently announced the creation of a new Cleveland, Ohio, district for the sales and distribution of mechanical rubber goods, with headquarters in the company's tire sales district offices at Cleveland.

Manager for the new Cleveland district will be H. D. Foster, who has been Cleveland territory mechanical goods salesman for the company since 1924. The new Cleveland district, formerly a part of the Pittsburgh sales district, includes Akron, Youngstown, Canton and the area bounded by those key cities.

Succeeding Foster as Cleveland territory salesman will be W. L. Clark, who is transferred to the new assignment from the company's Akron mechanical goods staff. His headquarters are likewise at Cleveland.

Lowes Appointed The S. M. Jones Company Tulsa Representative

P. C. Jones, president of The S. M. Jones Company, announces the appointment of J. W. Lowes, Jr., as Tulsa district representative, effective February 1.

J. W. LOWES, JR.
District representative, The S. M. Jones Company, at Tulsa.

Lowes, a graduate of Carnegie Tech, was associated with the field engineering department of The S. M. Jones Company and more lately was the company's Western Kansas representative. He has had considerable experience on pumping problems affecting sucker rods and his appointment fills the vacancy caused by the promotion of W. F. Slater, formerly Tulsa district representative, to California.

Five Sizes of Oilbath Geared Powers In "Oilwell" Display

Five sizes of oilbath geared powers, all of the same general design, comprise a very striking display on exhibit at the Dallas office of Oil Well Supply Company. These five sizes make up the most complete line offered by a single manufacturer, it is claimed. The oil field ratings at 20 s.p.m. are 30, 50, 80, 100 and 150 horsepower with Lewis Formula industrial ratings of 106, 172,

Standco NO-SMOKE

STANDCO BRAKE LINING

Nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 1940, Composite Catalog.

STANDARD BRAKE LINING CO.

MURRAY RUBBER CO.

Specializing in the manufacture of High Quality

Mechanical Rubber Goods

Prompt, Efficient Service to

OIL FIELD EQUIPMENT MANUFACTURERS

Molded, Mandrel and Extruded Packers and Washers

Houston's Only Exclusive Jobbing Manufacturing plant. Equipped with Calender, Mill, Tuber, Presses and Pot Vulcanizers.

FACTORY TRAINED MEN.

1822-24 Washington Ave. Houston, Texas

YOU DRILL . . . WE'LL FURNISH the MACHINERY and DRILL PIPE . . .

All thoroughly reconditioned in our own shop . . . for SALE or RENTALS. Call or wire for prices.

NEAL LUCEY COMPANY

2107 QUITMAN ST.-PRESTON 9614

HOUSTON, TEXAS

GEOLOGICAL SCIENTIFIC SERVICE CO.

PETROLEUM BLDG.

FT. WORTH TEXAS

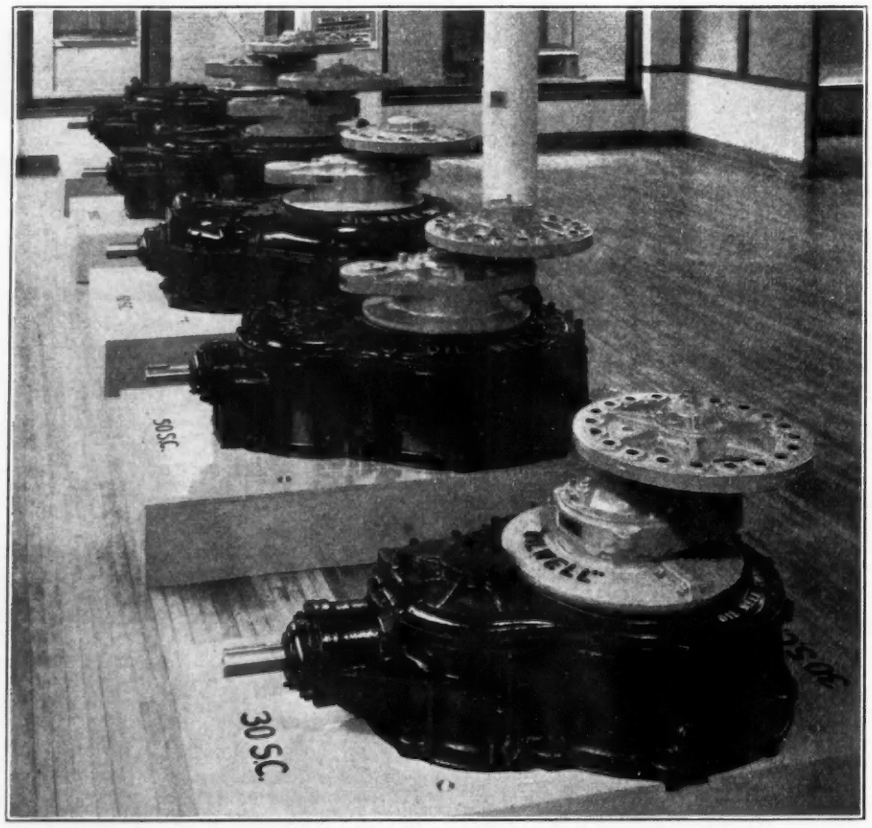
240, 385 and 510 horsepower respectively.

Long before the turn of the century, Oil Well Supply Company was a leading manufacturer of geared powers. In 1930, "Oilwell" constructed the first fully-enclosed, roller-bearing, double-reduction gear driven power. This first unit was rated at 80 horsepower for oil field service. Two larger and two smaller powers were later developed to provide economical sizes for every central pumping requirement.

The general advantages of modern enclosed geared powers include weatherproof construction, minimum installation and housing expense and simplified drive. A distinctive feature of all sizes in the "Oilwell" line is the stationary-spindle construction. It provides direct transfer of side pull to the base and foundation rather than indirect transfer through the housing cover and the joint between the base and the cover. Another advantage of this construction is the favorable bearing spacing between the crank pin and the upper spindle bearing and also between the upper and lower spindle bearings.

"Oilwell's" stationary-spindle construction makes possible the choice of two stroke-lengths with a single crank of minimum overhang. This dual-stroke arrangement is provided on all but the smallest of the five sizes.

Other features of this complete line of geared powers include spiral-bevel and single-helical gearing, all bearings of heavy-duty tapered-roller type, positive and simplified lubrication, compact construction and high mechanical efficiency. All gears and pinions are precision-cut and heat-treated to insure ample strength and excellent wearing qualities.



Oil Well Supply Company's Geared Power Display

Allis-Chalmers Promotes Gallos and Birch

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, recently announced the appointment of George Gallos as assistant manager, in charge of sales promotion embracing advertising, bulletins, exhibitions, house organs, etc.

A. K. Birch has been appointed assistant manager in charge of market analysis, sales organization service embracing price books, data and sales information.

MacClatchie Barbeque Well Attended

J. Warren MacClatchie, president of MacClatchie Manufacturing Company, Compton, California, recently entertained members of the oil fraternity with a barbecue at his Double V Ranch at Saugus, California. Wyoming elk and pig from the MacClatchie ranch were prepared in the best Spanish tradition, and with baked beans and other fixings furnished a real feed.

When MacClatchie was host at a feed

B. F. Goodrich Company Makes New Appointments

The B. F. Goodrich Company, Akron, Ohio, has transferred E. T. Campbell, formerly assistant manager of petroleum sales at Akron, to New York as assistant manager of petroleum sales in the eastern division.

In that post he will succeed William Sewall, recently named manager of the petroleum sales department with headquarters in Akron. Morris A. Start, Atlanta, Georgia, petroleum representative, takes Campbell's place as assistant manager of petroleum sales in Akron, and is in turn succeeded by E. H. Fitch as Atlanta representative.

Twin Disk Clutch Company Establishes New Factory Branch

Twin Disc Clutch Company, Racine, Wisconsin, has opened a new factory branch at 2826 Main Street, Dallas, Texas, under the direction of J. B. Jenkins, special oil field factory representative.

A complete stock of replacements parts will be carried on special equipment used throughout the oil industry. Special oil field engine service, data and assistance will be offered to the engineers and operators.

Squeaks from the Bull Wheel

Cautious

Amateur Magician: "Will the gentleman in the second row please lend me his hat?"

The Gentleman: "Not until you return the lawn mower you borrowed last summer."

Why He Was Not Promoted

He watched the clock.
He was always late.
He only half did things.
He didn't study up on his job.
He associated with his inferiors.
He did not strive for promotion.
He didn't have to—
He was president of the company.

Once More

On a recent Sabbath, when Sonny, aged four, reached home, his mother inquired, "And how was Sunday School this morning, dear?"

"Not so good," he said, and looked very sober. "Daniel's in the lion's den again."

Advice Sought and Given

Pretty Nurse: "Every time I take the patient's pulse, it gets faster. What shall I do?"

Doctor: "Blindfold him."

Worth More

"Lend me $5, old man."

"Lending often spoils friendship, and ours is worth more than $5."

"Make it ten, then."

Mystery Unveiled

A man looking at some neckties tossed one or two aside contemptuously. Lingering after having made his purchase, he noticed that the clerk put those he had so positively rejected in a separate box.

"What becomes of those?" he inquired.

"We sell them to the women who come in here to buy ties for men."

A Tightwad

"Did you say your husband was fond of those clinging gowns, Mary?"

"Yes. He likes one to cling to me for about three years."

A Tired Retort

Changing a tire, eh?

No. Just a kindly disposition. I get out every few miles and jack it up to give it a rest.

Somewhat Uncertain

In the midst of fierce fighting in the Spanish revolution two armed bodies were approaching each other so that a third was about to be caught between them.

The commander of the third party saw the predicament. On the right government troops, on the left insurgents.

"General, why do you not give the order to fire?" asked an aide.

"I would like to," responded the general, "but I can't remember which side we're fighting for!"

Tact

A seemingly stupid young fellow was being bullied in cross-examination. "Do you ever work?" demanded the attorney.

"Not much," the witness agreed.

"Have you ever earned as much as $10 in one week?"

"Ten dollars? Yeah. A couple of times."

"Is your father regularly employed?"

"Nope."

"Isn't it true that he's a worthless good-for-nothing, too?"

"I don't know about that," said the witness. "But you might ask him. He's sittin' there on the jury."

Troublesome Kinfolks

Attorney (asked about divorce proceedings)—"Now, how long have your relations been unpleasant?"

Mrs. Petunia Jackson—"Mah relations? Why dey is always been as nice as pie. It's his kin-folks whut's causin' so much trouble."

Better Bury Him

I want to insert an obituary notice in your paper. How much will it be?

Twenty-five cents an inch, madam.

Oh, land sakes, and John was six feet tall!

Super Salesman

"That fellow is too slick for me. Sold me a lot that was two feet under water. I went around and demanded my money back."

"Get it?"

"Get nothing. He sold me a motor boat."

Excused

Indignant Parent (6 a.m.) — Young man, what do you mean by bringing my daughter in at this hour?

Flaming Youth—Well I gotta be at work by 7.

Well, Well!

There had been a wordy falling-out between Mrs. Halloran and Mrs. Donohue. There had been words: in fact, more, there had been language. Mrs. Halloran had gone to church early in the morning, and fulfilled the duties of her religion and was returning primly home when Mrs. Donohue spied her and, still smouldering with volcanic fire, sent a broadside of lava at Mrs. Halloran.

The latter heard, flushed, opened her lips—and then suddenly checked herself. After a moment she spoke:

"Mrs. Donohue, I've just been to church and I'm in a state of grace. But, plaze Hivin, the next time I meet yez I won't be—and thin I'll tell yez what I think of yez!"

Off and On

I'm afraid, sir, I must ask you to pay in advance for the hire of the horse.

What's that for? Are you afraid I shall come back without the horse?

O no, sir. But the horse might come back without you.

And that's no hokum—for the MILLER is the Sand Pump with the powerful suction action in World Wide use for cleaning-out sand and sediment, increasing production.

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type. ¼-inch wall tube HEAVY Type Sand Pumps.

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With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

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Used when tools are run and when well is shot to quickly remove loose material.

● STAR BOTTOM
Used for cutting the sand loose.

● CHISEL BOTTOM
(In Pump)
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